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ELECTRICAL SWITCHING SYSTEMS REPAIRMAN AFSC 36252.(U)
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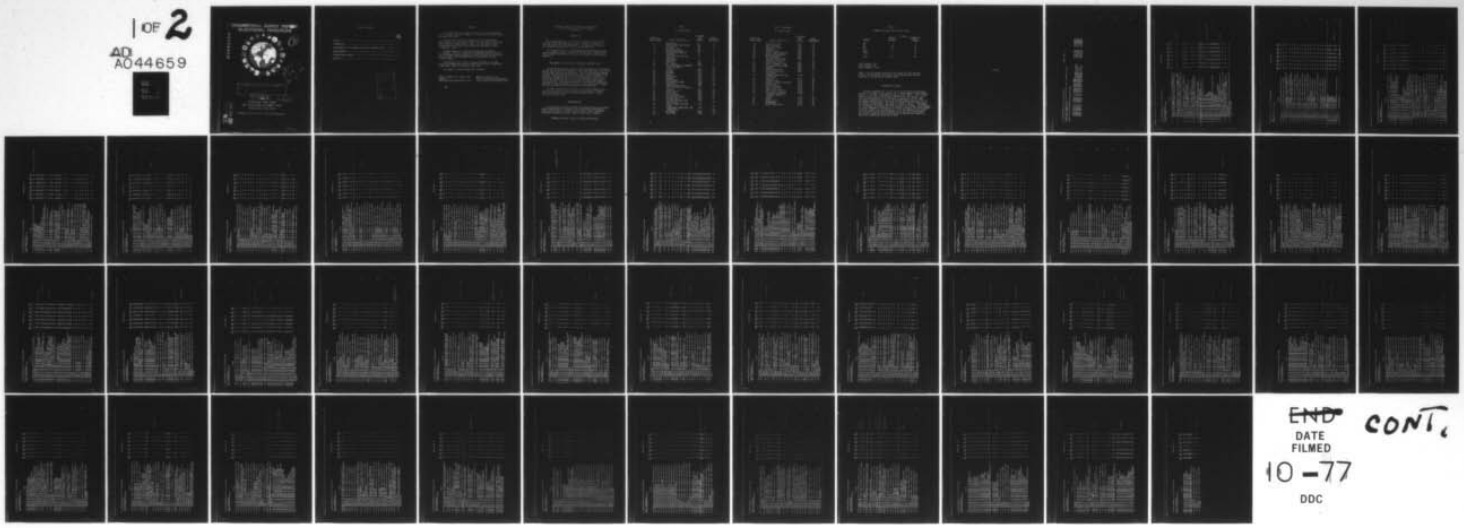

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OCCUPATIONAL SURVEY REPORT
ELECTRONIC PRINCIPLES

ELECTRICAL SWITCHING SYSTEMS REPAIRMAN

AFSC 36252.

AFPT-90-362-222

14 September 1977

52 p.

OCCUPATIONAL SURVEY BRANCH
USAF OCCUPATIONAL MEASUREMENT CENTER
LACKLAND AFB TEXAS 78236

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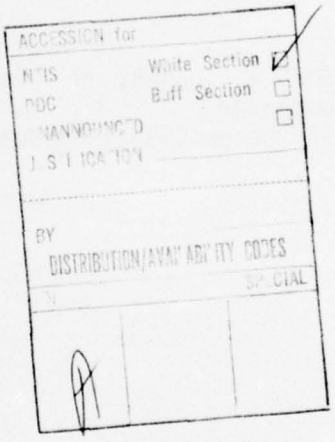

PREFACE

This report presents a summary of the results of a detailed Air Force Electronic Principles Survey of the Electrical Switching Systems Repairman, AFSC 36252.

The Electronic Principles Inventory (EPI) was developed by Major Thomas J. O'Connor and Mr. Hendrick W. Ruck and the survey data were analyzed by Captain Elena J. Weber. All are members of the Occupational Survey Branch, USAF Occupational Measurement Center, Lackland AFB, Texas.

Computer programs for analyzing the data were designed by Dr. Raymond E. Christal, Occupational and Manpower Research Division, Air Force Human Resources Laboratory (AFHRL), and were written by the Project Analysis and Programming Branch, Computational Sciences Division, AFHRL.

Distribution of this report is made upon request to the USAF Occupational Measurement Center, attention of the Chief, Occupational Survey Branch (OMY), Lackland AFB, Texas 78236.

This report has been reviewed and is approved.

JAMES A. TURNER, JR., Colonel, USAF
Commander
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WALTER E. DRISKILL, Ph.D.
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ELECTRONIC PRINCIPLES OCCUPATIONAL SURVEY REPORT
ELECTRICAL SWITCHING SYSTEMS REPAIRMAN
AFSC 36252

INTRODUCTION

This report summarizes the results of the administration of the Electronic Principles Inventory to airmen assigned as Electrical Switching Systems Repairman (AFSC 36252). The data for this report were collected during the period April through June 1977.

This report describes: (1) development and administration of the survey instrument; and (2) electronic principles used by DAFSC 5-skill level personnel both CONUS and overseas and assigned to selected major commands.

DEVELOPMENT OF THE ELECTRONIC PRINCIPLES INVENTORY (EPI)

The EPI was developed by personnel from the Occupational Survey Branch who were well qualified in theoretical physics and electronics, as well as in task analysis and survey development. Over 300 maintenance personnel from SAC, TAC, ADC, MAC, and AFCS participated in the development of the inventory. Representing the five ATC training centers, electronics experts who averaged 12 years of maintenance experience and four years of electronic principles instruction experience spent several weeks refining the EPI. In addition, personnel at the Electrical Engineering Department of the USAF Academy and the Air Force Human Resources Laboratory were consulted during the development of the inventory.

The final version of the EPI used in this survey contained 1,257 items in 62 subject matter areas covering all electronic principles training given at the five ATC technical training centers. Table 1 lists the 62 subject areas.

ADMINISTRATION

The Electronic Principles Inventory was administered by mail to AFSC 36252 airmen worldwide. Responses from 68 individuals represented 30 percent of the total of all AFSC 36252 personnel. Table 2 shows the percentage distribution by major command of the survey incumbents.

TABLE 1

EPI SUBJECT AREAS

SEQUENCE OF SUBJECT AREAS	SUBJECT AREA TITLE	BEGINNING ITEM NUMBER	GPSUM PAGE NUMBER
1	MATHEMATICS	A1	2
2	DIRECT CURRENT AND VOLTAGE	A15	2
3	RESISTANCE	A24	2
4	MULTIMETER USES	B52	3
5	ALTERNATING CURRENT	B61	4
6	INDUCTORS AND INDUCTIVE REACTANCE	B67	4
7	CAPACITORS AND CAPACITIVE REACTANCE	C92	5
8	TRANSFORMERS	C1[illegible]3	6
9	MAGNETISM	C171	7
10	RCL CIRCUITS	D185	8
11	SERIES AND PARALLEL RESONANCE (TIME CONSTANTS)	D229	10
12	FILTERS	D239	10
13	COUPLING	E261	11
14	SOLDERING	E273	11
15	RELAYS	E295	12
16	MICROPHONES	F314	12
17	SPEAKERS	F327	13
18	OSCILLOSCOPES	F342	13
19	SEMICONDUCTOR DIODES	G354	13
20	TRANSISTORS	G404	15
21	TRANSISTOR AMPLIFIERS	G428	16
22	SOLID-STATE SPECIAL PURPOSE DEVICES	H477	19
23	POWER SUPPLIES	H483	19
24	OSCILLATORS	H512	19
25	MULTIVIBRATORS	I539	20
26	LIMITERS AND CLAMPERS	I555	21
27	ELECTRON TUBES	I565	21
28	ELECTRON TUBE AMPLIFIERS AND CIRCUITS	J609	22
29	SPECIAL PURPOSE ELECTRON TUBES	J616	23
30	HETERODYNING, MODULATION, AND DEMODULATION	J632	23
31	AM SYSTEMS	K638	23
32	FM SYSTEMS	K666	24

TABLE 1 (CONTINUED)

EPI SUBJECT AREAS

SEQUENCE OF SUBJECT AREAS	SUBJECT AREA TITLE	BEGINNING ITEM NUMBER	GPSUM PAGE NUMBER
33	NUMBERING SYSTEMS	K685	25
34	LOGIC FUNCTIONS	L695	25
35	BOOLEAN EQUATIONS	L708	26
36	COUNTERS	L733	27
37	TIMING CIRCUITS	M757	27
38	USE OF SIGNAL GENERATORS	M769	28
39	MOTORS AND GENERATORS	M779	28
40	METER MOVEMENTS	N808	29
41	SATURABLE REACTORS AND MAGNETIC AMPLIFIERS	N818	29
42	WAVESHAPING CIRCUITS	N834	30
43	SINGLE SIDEBAND SYSTEMS	0845	30
44	PULSE MODULATION SYSTEMS	0875	31
45	ANTENNAS	0914	32
46	TRANSMISSION LINES	P953	34
47	WAVEGUIDES AND CAVITY RESONATORS	P984	35
48	MICROWAVE AMPLIFIERS AND OSCILLATORS	P1034	37
49	REGISTERS	Q1110	39
50	STORAGE DEVICES	Q1117	40
51	DIGITAL TO ANALOG CONVERTERS	Q1126	40
52	PHANTASTRONS	Q1140	41
53	SCHMITT TRIGGERS	R1141	41
54	CABLE FABRICATION	R1144	41
55	INPUT/OUTPUT DEVICES	S1146	41
56	PHOTO SENSITIVE DEVICES	S1149	41
57	SYNCHRONOUS VIBRATIONS (CHOPPER CIRCUITS)	S1150	41
58	INFRARED	T1159	41
59	LASERS	T1186	42
60	DISPLAY TUBES	T1220	43
61	PROGRAMMING	U1234	43
62	DB AND POWER RATIOS	U1255	44

TABLE 2

COMMAND REPRESENTATION OF SURVEY SAMPLE

	36252	
COMMAND	PERCENT ASSIGNED	PERCENT OF SAMPLE
ADC	2	2
ATC	6	5
AFCS	69	46
TAC	14	5
USAFE	9	35
OTHER		7
TOTAL	100	100

Total Assigned - 226
Total Sampled - 68
Percent Sampled - 30%*

*NOTE: Only a 40 percent sampling of this career specialty had been ordered. Of the booklets distributed only 60 percent were returned resulting in the low percent sampled figure.

PRESENTATON OF RESULTS

Personnel responded "yes" or "no" to the 1,257 electronic principles questions as related to their present job. A Group Summary (GPSUM) computer printout is provided in the Appendix portion of this report. Page 1 of the GPSUM lists the seven selected groups identified for this report. Pages 2-44 show the percentage of the incumbents responding to the EPI items. The computer program results display the percent members answering "yes" to the subject area questions. The reader can locate a specific subject area by referring to the Appendix page number as listed in Table 1. For example, the Transformers area results are given on page 6 of the GPSUM. The percentage of survey respondents indicating use of specific electronic principles ranged from high in areas such as Soldering (pp. 11-12) and Registers (pp. 39-40) to low in areas such as Single Sideband Systems (pp. 30-31) and Antennas (pp. 32-34). Additional AFSC 362X2 data can be obtained upon request to the Chief, Occupational Survey Branch (OMY).

APPENDIX

TABULATION OF ELECTRONIC PRINCIPLES UTILIZATION DATA FOR SELECTED GROUPS
IN THE 362X2 CAREER FIELD.

REPORTS ON THE FOLLOWING GROUPS WERE REQUESTED

GROUP IDENTITY =	SPC026	ALL AIRMEN DAFSC 36252	CONTAINING	68 MEMBERS.
GROUP IDENTITY =	SPC027	ALL AIRMEN DAFSC 36252 STATIONED IN CONUS	CONTAINING	13 MEMBERS.
GROUP IDENTITY =	SPC028	ALL AIRMEN DAFSC 36252 STATIONED OVERSEAS	CONTAINING	55 MEMBERS.
GROUP IDENTITY =	SPC029	ALL AIRMEN DAFSC 36252 ASSIGNED TO ATC	CONTAINING	3 MEMBERS.
GROUP IDENTITY =	SPC030	ALL AMN DAFSC 36252 ASSIGNED TO AFCS	CONTAINING	31 MEMBERS.
GROUP IDENTITY =	SPC031	ALL AIRMEN DAFSC 36252 ASSIGNED TO TAC	CONTAINING	3 MEMBERS.
GROUP IDENTITY =	SPC032	ALL AIRMEN DAFSC 36252 ASSIGNED TO USAFE	CONTAINING	24 MEMBERS.

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
A	1	A1-01 IN YOUR PRESENT JOB, DO YOU USE INSTRUMENTS, SUCH AS METERS OR OSCILLOSCOPES, IN WHICH IT IS NECESSARY TO AMPLIFY OR ATTENUATE VOLTAGE, RESISTANCE, ETC., BY POWERS OF 10.	84	92	82	100	84	100	79	
A	2	A1-02 DO YOU USE PUBLICATIONS, SUCH AS A TECHNICAL ORDERS OR MAINTENANCE MANUALS, IN WHICH IT IS NECESSARY FOR YOU TO MULTIPLY OR DIVIDE BY A POWER OF 10 BEFORE YOU CAN APPLY THE INFORMATION FROM THE PUBLICATION IN A USEFUL WAY ON THE JOB.	37	23	40	33	39	0	29	MATHEMATICS
A	3	A1-03 DO YOU REARRANGE AND SOLVE FORMULAS OR EQUATIONS.	47	46	47	33	52	67	33	
A	4	A1-04 DO YOU CALCULATE THE SQUARE ROOT OF A QUANTITY.	15	15	15	33	6	0	17	
A	5	A1-05 DO YOU SOLVE FOR UNKNOWN QUANTITIES.	31	23	33	67	23	0	33	
A	6	A1-06 DO YOU CONVERT NUMBERS TO LOGARITHMS.	0	0	0	0	0	0	0	
A	7	A1-07 DO YOU USE LOGARITHM TABLES IN ANY TYPE OF CALCULATIONS.	1	0	2	0	0	0	4	
A	8	A1-08 DO YOU SOLVE QUADRATIC EQUATIONS.	6	0	7	0	6	0	4	
A	9	A1-09 DO YOU USE THE NATURAL SYSTEM OF LOGARITHMS.	4	0	5	0	10	0	0	
A	10	A1-10 DO YOU PERFORM CALCULATIONS ON VECTOR QUANTITIES.	6	15	4	33	10	0	0	
A	11	A1-11 DO YOU WORK WITH TRIGONOMETRIC FUNCTIONS SUCH AS SINE, COSINE, OR TANGENT.	1	0	2	0	3	0	0	
A	12	A1-12 DO YOU DETERMINE AREAS OF PLANE FIGURES.	0	0	0	0	0	0	0	
A	13	A1-13 DO YOU SOLVE OR USE SIMULTANEOUS EQUATIONS.	3	0	4	0	3	0	4	
A	14	A1-14 DO YOU SOLVE OR USE PROPORTIONS.	12	8	13	0	6	0	21	
A	15	A2-01 DO YOU USE THE TERM VOLTAGE OR VOLT (V).	94	100	93	100	100	100	88	
A	16	A2-02 DO YOU USE THE TERM ELECTROMOTIVE FORCE (EMF).	44	54	42	67	45	33	29	
A	17	A2-03 DO YOU USE THE TERM OHM.	94	100	93	100	100	100	88	
A	18	A2-04 DO YOU USE THE TERM ION.	15	8	16	0	19	0	8	
A	19	A2-05 DO YOU USE THE TERM DYNE.	7	0	9	0	10	0	4	
A	20	A2-06 DO YOU USE THE TERM AMPERE.	91	100	89	100	97	100	83	DIRECT CURRENT AND VOLTAGE
A	21	A2-07 DO YOU USE THE TERM NEUTRON.	31	8	36	0	42	0	21	
A	22	A2-08 DO YOU USE THE TERM COULOMB.	19	0	24	0	29	0	8	
A	23	A2-09 DO YOU USE THE TERM PROTON.	31	8	36	0	42	0	21	
A	24	A3-01 DO YOU WORK WITH RESISTORS IN YOUR PRESENT JOB.	87	85	87	67	84	100	92	
A	25	A3-02 DO YOU INSPECT RESISTORS.	90	85	91	67	97	67	88	
A	26	A3-03 DO YOU CLEAN RESISTORS.	63	62	64	67	65	67	54	
A	27	A3-04 DO YOU ADJUST RESISTORS.	82	54	89	33	90	33	83	
A	28	A3-05 DO YOU CHECK OHMIC VALUE OR RESISTORS.	91	77	95	33	97	100	92	
A	29	A3-06 DO YOU REMOVE OR REPLACE RESISTORS.	90	77	93	67	90	100	92	
A	30	A3-07 DO YOU USE OR REFER TO TEMPERATURE COEFFICIENTS FOR RESISTORS ON ANY TASKS YOU PERFORM.	31	54	25	67	98	0	4	RESISTANCE
A	31	A3-08 DO YOU USE OR REFER TO RESISTOR SYMBOLS SUCH AS FIXED RESISTOR SYMBOLS OR TAPPED RESISTOR SYMBOLS.	87	77	89	67	84	100	92	
A	32	A3-09 DO YOU IDENTIFY OR CLASSIFY THE RESISTORS YOU WORK WITH AS CARBON, FIXED WIRE, SLIDE TAP, RHEOSTAT, OR POTENTIOMETER.	82	85	82	67	90	100	71	
A	33	A3-10 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE OHMIC VALUE OF RESISTANCE.	87	85	87	67	87	100	88	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
A	34	A3-11 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE TOLERANCE.	78	85	76	67	84	100	67	
A	35	A3-12 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE FAILURE RATE.	29	23	31	33	32	0	25	
A	36	A3-13 DO YOU MAKE DECISIONS IN WHICH YOU MUST DETERMINE HOW TWO OR MORE BATTERIES MUST BE CONNECTED TOGETHER TO ACHIEVE A SPECIFIC VOLTAGE.	93	31	95	33	92	67	92	
A	37	A3-14 DO YOU USE OR REFER TO THE SCHEMATIC SYMBOLS WHICH REPRESENT BATTERIES, FUSES, CONDUCTORS, LAMPS, OR SWITCHES	91	85	93	67	94	100	92	
A	38	A3-15 DO YOU CALCULATE TOTAL RESISTANCE FOR SERIES RESISTIVE CIRCUITS.	47	46	47	33	58	33	33	
A	39	A3-16 DO YOU CALCULATE TOTAL CURRENT FOR SERIES RESISTIVE CIRCUITS.	47	46	47	33	58	33	33	
A	40	A3-17 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR SERIES RESISTIVE CIRCUITS.	50	46	51	33	58	33	92	
A	41	A3-18 DO YOU CALCULATE POWER DISSIPATION FOR SERIES RESISTIVE CIRCUITS.	35	38	35	0	48	33	17	
A	42	A3-19 DO YOU CALCULATE TOTAL RESISTANCE FOR SERIES PARALLEL RESISTIVE CIRCUITS.	44	46	44	33	58	33	25	
A	43	A3-20 DO YOU CALCULATE TOTAL CURRENT FOR SERIES PARALLEL RESISTIVE CIRCUITS.	44	46	44	33	58	33	25	
A	44	A3-21 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR SERIES PARALLEL RESISTIVE CIRCUITS.	47	46	47	33	58	33	33	
A	45	A3-22 DO YOU CALCULATE INDIVIDUAL BRANCH CURRENTS FOR SERIES PARALLEL RESISTIVE CIRCUITS.	44	46	44	33	58	33	25	
A	46	A3-23 DO YOU CALCULATE POWER DISSIPATION FOR SERIES PARALLEL RESISTIVE CIRCUITS.	32	38	31	0	45	33	13	
A	47	A3-24 DO YOU CALCULATE TOTAL RESISTANCE FOR PARALLEL RESISTIVE CIRCUITS.	44	46	44	33	58	33	25	
A	48	A3-25 DO YOU CALCULATE TOTAL CURRENT FOR PARALLEL RESISTIVE CIRCUITS.	44	46	44	33	58	33	25	
A	49	A3-26 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR PARALLEL RESISTIVE CIRCUITS.	43	46	42	33	55	33	25	
A	50	A3-27 DO YOU CALCULATE INDIVIDUAL BRANCH CURRENTS FOR PARALLEL RESISTIVE CIRCUITS.	43	46	42	33	55	33	25	
A	51	A3-28 DO YOU CALCULATE POWER DISSIPATION FOR PARALLEL RESISTIVE CIRCUITS.	32	38	31	0	45	33	13	
B	52	B1-01 DO YOU MEASURE RESISTANCE.	96	92	96	100	97	100	96	
B	53	B1-02 DO YOU REPAIR OHMMETERS.	7	0	9	0	10	0	4	
B	54	B1-03 DO YOU MEASURE VOLTAGE.	96	100	95	100	100	100	92	
B	55	B1-04 DO YOU REPAIR VOLTMETERS.	9	0	11	0	10	0	4	
B	56	B1-05 DO YOU REPAIR AMMETERS.	7	0	9	0	10	0	0	
B	57	B1-06 DO YOU MEASURE CURRENT.	91	92	91	100	97	67	88	MULTIMETER USES
B	58	B1-07 DO YOU USE MULTIMETERS.	94	100	93	100	97	100	92	
B	59	B1-08 DO YOU DIRECTLY USE A QUANTITY OF CHARGE CALLED A COULOMB.	7	0	9	0	3	0	8	
B	60	B1-09 DO YOU READ SCHEMATICS.	96	100	95	100	100	100	92	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
B	61	B2-01 DO YOU USE OR REFER TO THE TERM EFFECTIVE VOLTAGE (RMS).	63	69	62	67	71	67	50	
B	62	B2-02 DO YOU USE OR REFER TO THE TERM PEAK TO PEAK VOLTAGE.	76	92	73	100	84	100	58	ALTERNATING CURRENT
B	63	B2-03 DO YOU USE OR REFER TO THE TERM AVERAGE VOLTAGE (DC).	62	77	58	33	74	67	42	
B	64	B2-04 DO YOU USE OR REFER TO THE TERM WAVE LENGTH.	54	69	51	33	77	33	21	
B	65	B2-05 DO YOU USE OR REFER TO THE TERM FREQUENCY.	87	100	89	100	94	100	76	
B	66	B2-06 DO YOU USE OR REFER TO THE TERM INSTANTANEOUS VALUE.	21	0	25	0	23	0	13	
B	67	B3-01 DO YOU WORK WITH INDUCTORS OR CIRCUITS CONTAINING INDUCTORS, CHOKES, OR CHOKE COILS IN YOUR PRESENT JOB.	68	46	73	33	74	0	71	
B	68	B3-02 DO YOU INSPECT INDUCTORS.	63	46	67	33	68	0	67	
B	69	B3-03 DO YOU CLEAN INDUCTORS.	47	23	53	33	48	0	46	
B	70	B3-04 DO YOU ADJUST INDUCTORS.	38	23	42	0	45	0	33	
B	71	B3-05 DO YOU REMOVE OR REPLACE INDUCTORS.	59	38	64	33	65	0	58	INDUCTORS AND INDUCTIVE REACTANCE
B	72	B3-06 DO YOU USE OR REFER TO INDUCTANCE.	47	31	51	33	55	0	42	
B	73	B3-07 DO YOU USE OR REFER TO HENRIES.	40	31	42	33	48	0	29	
B	74	B3-08 DO YOU USE OR REFER TO INDUCTIVE REACTANCE.	37	31	38	33	48	0	21	
B	75	B3-09 DO YOU USE OR REFER TO COPPER LOSS IN INDUCTORS.	10	0	13	0	16	0	0	
B	76	B3-10 DO YOU USE OR REFER TO HYSTERESIS LOSS IN INDUCTORS.	10	0	13	0	16	0	0	
B	77	B3-11 DO YOU USE OR REFER TO EDDY CURRENT LOSS IN INDUCTORS	13	0	16	0	19	0	4	
B	78	B3-12 DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTANCE IS PROPORTIONAL TO THE SQUARE OF THE NUMBER OF TURNS OF THE COIL.	15	0	18	0	19	0	8	
B	79	B3-13 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE CROSS SECTIONAL AREA OF THE CORE.	10	0	13	0	13	0	4	
B	80	B3-14 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS INVERSELY PROPORTIONAL TO ITS LENGTH.	12	0	15	0	16	0	4	
B	81	B3-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE PERMEABILITY OF THE CORE MATERIAL.	18	8	20	0	19	0	8	
B	82	B3-16 DO YOU CALCULATE INDUCTANCE FOR PARTICULAR INDUCTORS USING FORMULAS.	19	0	24	0	29	0	8	
B	83	B3-17 DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTANCE IN SERIES.	25	8	29	0	35	0	17	
B	84	B3-18 DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTORS IN PARALLEL.	25	8	29	0	35	0	17	
B	85	B3-19 DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTORS IN SERIES-PARALLEL CIRCUITS.	26	8	31	0	35	0	17	
B	86	B3-20 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LAGS VOLTAGE IN AC INDUCTOR CIRCUITS.	38	15	44	0	48	33	25	
B	87	B3-21 DO YOU CALCULATE INDUCTIVE REACTANCE.	28	8	33	0	32	0	25	
B	88	B3-22 DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTIVE REACTANCE IS DIRECTLY PROPORTIONAL TO FREQUENCY.	24	8	27	0	39	0	8	
B	89	B3-23 DO YOU WORK WITH POWER INDUCTORS.	37	15	42	0	35	0	38	
B	90	B3-24 DO YOU WORK WITH AUDIO FREQUENCY INDUCTORS.	49	8	58	0	42	33	67	
B	91	B3-25 DO YOU WORK WITH RADIO FREQUENCY INDUCTORS.	7	8	7	0	6	0	8	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
C	92	C1-01 DO YOU WORK WITH CAPACITORS OR CIRCUITS CONTAINING CAPACITORS IN YOUR PRESENT JOB.	82	69	86	0	90	100	88	CAPACITORS AND CAPACITIVE REACTANCE
C	93	C1-02 DO YOU INSPECT CAPACITORS.	81	69	89	33	87	67	83	
C	94	C1-03 DO YOU CLEAN CAPACITORS.	62	46	65	33	68	67	54	
C	95	C1-04 DO YOU ADJUST CAPACITORS.	32	31	33	0	35	33	25	
C	96	C1-05 DO YOU TEST CAPACITORS.	72	62	75	33	87	33	63	
C	97	C1-06 DO YOU DISCHARGE CAPACITORS.	72	54	76	0	77	67	75	
C	98	C1-07 DO YOU REMOVE OR REPLACE CAPACITORS.	82	69	85	33	90	100	79	
C	99	C1-08 DO YOU USE OR REFER TO DISTRIBUTED CAPACITANCE.	16	8	18	0	23	0	4	
C	100	C1-09 DO YOU USE OR REFER TO ORBITAL STRESS OF ELECTRONS IN A DIELECTRIC.	6	0	7	0	6	0	0	
C	101	C1-10 DO YOU USE OR REFER TO FARADS, MICROFARADS, OR PICOFARADS.	75	69	76	33	77	67	79	
C	102	C1-11 DO YOU USE OR REFER TO CAPACITANCE.	74	69	75	33	81	67	71	
C	103	C1-12 DO YOU USE OR REFER TO DIELECTRIC CONSTANT	13	15	13	0	23	0	0	
C	104	C1-13 DO YOU USE OR REFER TO WORKING VOLTAGE RATING OF CAPACITORS	51	38	55	33	52	33	50	
C	105	C1-14 DO YOU USE OR REFER TO CAPACITIVE REACTANCE	37	46	35	33	48	33	21	
C	106	C1-15 DO YOU USE OR REFER TO CAPACITOR COLOR CODES	29	8	35	0	39	0	21	
C	107	C1-16 DO YOU WORK WITH CAPACITORS IN DC CIRCUITS	87	62	93	0	97	67	92	
C	108	C1-17 DO YOU WORK WITH CAPACITORS IN AC CIRCUITS	68	54	71	0	71	67	71	
C	109	C1-18 DO YOU WORK WITH CAPACITORS IN CIRCUITS WITH BOTH DC AND AC	68	54	71	33	68	33	75	
C	110	C1-19 DO YOU WORK WITH CAPACITORS IN DON'T REMEMBER WHICH CIRCUITS	10	15	9	0	23	0	0	
C	111	C1-20 DO YOU CALCULATE CAPACITANCE FOR PARTICULAR CAPACITORS USING FORMULAS	21	15	22	0	32	0	8	
C	112	C1-21 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITANCE OF A CAPACITOR IS DIRECTLY PROPORTIONAL TO THE DIELECTRIC CONSTANT	7	0	9	0	13	0	0	
C	113	C1-22 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITANCE OF A CAPACITOR IS INVERSELY PROPORTIONAL TO THE DIELECTRIC THICKNESS	7	0	9	0	13	0	0	
C	114	C1-23 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS IN SERIES	29	31	29	0	39	33	17	
C	115	C1-24 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS IN PARALLEL	31	31	31	0	39	33	17	
C	116	C1-25 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS IN SERIES-PARALLEL CIRCUITS	29	31	29	0	35	33	17	
C	117	C1-26 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT DOES NOT FLOW THROUGH CAPACITORS, IT ONLY APPEARS TO DO SO	31	23	33	0	39	33	17	
C	118	C1-27 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LEADS VOLTAGE IN AC CAPACITOR CIRCUITS	37	38	36	0	45	67	25	
C	119	C1-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITIVE REACTANCE IS INVERSELY PROPORTIONAL TO FREQUENCY	24	23	24	0	35	0	13	
C	120	C1-29 DO YOU CALCULATE CAPACITIVE REACTANCE	25	23	25	0	35	0	13	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
C 121	C1-30 DO YOU WORK WITH ROTOR-STATOR (VARIABLE) CAPACITORS	21	23	20	33	19	0	17	
C 122	C1-31 DO YOU WORK WITH COMPRESSION (TRIMMER) CAPACITORS	15	8	16	0	13	0	13	
C 123	C1-32 DO YOU WORK WITH ELECTROLYTIC (FIXED) CAPACITORS	82	69	85	0	94	100	79	
C 124	C1-33 DO YOU WORK WITH PAPER (FIXED) CAPACITORS	76	69	78	33	77	67	83	
C 125	C1-34 DO YOU WORK WITH MICA (FIXED) CAPACITORS	63	38	69	0	68	33	67	
C 126	C1-35 DO YOU WORK WITH CERAMIC (FIXED) CAPACITORS	72	54	76	0	81	100	67	
C 127	C1-36 DO YOU WORK WITH DON'T REMEMBER WHICH TYPE OF CAPACITORS	15	8	16	0	19	33	13	
C 128	C2-01 DO YOU WORK WITH TRANSFORMERS IN YOUR PRESENT JOB	72	54	76	0	77	100	71	
C 129	C2-02 DO YOU INSPECT TRANSFORMERS	74	54	78	0	84	67	71	
C 130	C2-03 DO YOU CLEAN TRANSFORMERS	57	38	62	0	68	67	46	
C 131	C2-04 DO YOU ADJUST TRANSFORMERS	41	31	44	0	58	33	21	
C 132	C2-05 DO YOU TROUBLESHOOT TRANSFORMERS	66	46	71	0	77	67	58	
C 133	C2-06 DO YOU REMOVE OR REPLACE COMPLETE TRANSFORMERS	68	54	71	0	77	100	63	
C 134	C2-07 DO YOU REMOVE OR REPLACE TRANSFORMER PARTS, SUCH AS THE PRIMARY WINDING	13	0	16	0	23	0	0	TRANSFORMERS
C 135	C2-08 DO YOU MAKE A DISTINCTION BETWEEN MUTUAL INDUCTION AND MUTUAL INDUCTANCE (M)	6	0	7	0	10	0	0	
C 136	C2-09 DO YOU USE THE SYMBOL FOR MUTUAL INDUCTANCE, M	7	8	7	0	10	33	0	
C 137	C2-10 DO YOU REFER TO OR USE THE COEFFICIENT OF COUPLING WHEN WORKING WITH TRANSFORMERS	12	0	15	0	13	0	8	
C 138	C2-11 DO YOU CALCULATE TURNS RATIOS FOR TRANSFORMERS USING CURRENT OR VOLTAGE RATIOS	28	8	33	0	48	0	8	
C 139	C2-12 DO YOU REFER TO REFLECTED IMPEDANCE WHEN WORKING WITH TRANSFORMERS	10	0	13	0	16	0	0	
C 140	C2-13 DO YOU CALCULATE IMPEDANCE INTERACTIONS FOR TRANSFORMERS	7	0	9	0	6	0	0	
C 141	C2-14 DO YOU WORK WITH AUTOTRANSFORMERS	26	23	27	0	32	0	21	
C 142	C2-15 DO YOU WORK WITH POWER TRANSFORMERS	65	46	69	0	77	67	54	
C 143	C2-16 DO YOU WORK WITH AUDIO TRANSFORMERS	54	38	58	0	55	33	63	
C 144	C2-17 DO YOU WORK WITH RADIO FREQUENCY TRANSFORMERS	10	15	9	0	13	0	8	
C 145	C2-18 DO YOU WORK WITH DON'T REMEMBER WHAT TYPE OF TRANSFORMERS	18	23	16	0	26	67	8	
C 146	C2-19 DO YOU CHECK TRANSFORMERS FOR OPEN WINDINGS BY MEASURING RESISTANCE	68	38	75	0	74	100	67	
C 147	C2-20 DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY MEASURING RESISTANCE	65	38	71	0	74	100	63	
C 148	C2-21 DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY MEASURING OUTPUT VOLTAGES	63	54	65	0	90	67	92	
C 149	C2-22 DO YOU MEASURE RESISTANCE OF TRANSFORMER WINDINGS TO DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-DOWN TURNS RATIO	34	15	38	0	48	33	17	
C 150	C2-23 DO YOU MEASURE OUTPUT VOLTAGE OF TRANSFORMERS TO DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-DOWN TURNS RATIO	40	23	44	0	55	33	25	
C 151	C2-24 DO YOU REFER TO BASIC TRANSFORMER SCHEMATIC SYMBOLS FOR TRANSFORMERS	74	62	76	0	81	100	71	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
C 152	C2-25 DO YOU REFER TO MULTIPLE SECONDARY-WINDINGS SCHEMATIC SYMBOLS FOR TRANSFORMERS	53	38	56	0	52	67	58	
C 153	C2-26 DO YOU REFER TO MULTIPLE TAP SCHEMATIC SYMBOLS FOR TRANSFORMERS	62	54	69	0	71	67	54	
C 154	C2-27 DO YOU REFER TO CENTER TAP SCHEMATIC SYMBOLS FOR TRANSFORMERS	63	46	67	0	68	67	63	
C 155	C2-28 DO YOU REFER TO AIR CORE SCHEMATIC SYMBOLS FOR TRANSFORMERS	34	15	38	0	35	33	33	
C 156	C2-29 DO YOU REFER TO IRON CORE SCHEMATIC SYMBOLS FOR TRANSFORMERS	47	23	53	0	52	33	46	
C 157	C2-30 DO YOU REFER TO COMBINATIONS OF THE ABOVE SCHEMATIC SYMBOLS FOR TRANSFORMERS	44	31	47	0	48	33	38	
C 158	C2-31 DO YOU DETERMINE PHASE RELATIONSHIPS BETWEEN SECONDARY AND PRIMARY VOLTAGES OF TRANSFORMERS USING SCHEMATIC SYMBOLS	32	23	36	0	32	67	29	
C 159	C2-32 DO YOU DETERMINE OR REFER TO THE TYPE OF CORE IN TRANSFORMERS YOU WORK WITH	26	15	29	0	35	33	13	
C 160	C2-33 DO YOU REFER TO OR USE THE GENERAL RULE THAT THE TURNS RATIO OF A TRANSFORMER IS EQUAL TO THE VOLTAGE RATIO	35	23	38	0	45	67	21	
C 161	C2-34 DO YOU USE OR REFER TO STEP-UP OR STEP-DOWN RATIOS FOR TRANSFORMERS	38	23	42	0	52	67	13	
C 162	C2-35 DO YOU CALCULATE VOLTAGE RATIOS FOR TRANSFORMERS USING TURNS RATIOS	32	23	35	0	52	67	8	
C 163	C2-36 DO YOU CALCULATE CURRENT RATIOS FOR TRANSFORMERS USING TURNS RATIOS	28	15	31	0	39	67	13	
C 164	C2-37 DOES YOUR JOB INVOLVE ANY TASKS DEALING WITH THREE PHASE TRANSFORMERS	19	8	22	0	19	0	17	
C 165	C2-38 DO YOU INSPECT THREE PHASE TRANSFORMERS	9	0	11	0	10	0	4	
C 166	C2-39 DO YOU CLEAN OR LUBRICATE THREE PHASE TRANSFORMERS	7	8	7	0	10	0	0	
C 167	C2-40 DO YOU ADJUST THREE PHASE TRANSFORMERS	4	0	5	0	6	0	0	
C 168	C2-41 DO YOU TROUBLESHOOT THREE PHASE TRANSFORMERS	9	0	11	0	10	0	8	
C 169	C2-42 DO YOU REMOVE OR REPLACE COMPLETE THREE PHASE TRANSFORMERS	7	0	9	0	6	0	8	
C 170	C2-43 DO YOU REMOVE OR REPLACE THREE PHASE TRANSFORMER PARTS SUCH AS WINDINGS	4	0	5	0	6	0	0	
C 171	C3-01 DO YOU USE OR REFER TO PERMANENT MAGNETS	34	23	36	33	32	67	25	
C 172	C3-02 DO YOU USE OR REFER TO TEMPORARY MAGNETS	37	23	40	33	39	67	25	
C 173	C3-03 DO YOU USE OR REFER TO RETENTIVITY OF MAGNETIC MATERIALS	21	15	22	33	23	33	8	
C 174	C3-04 DO YOU USE OR REFER TO RELUCTANCE OF MAGNETIC MATERIALS	21	23	20	33	26	33	4	MAGNETISM
C 175	C3-05 DO YOU USE OR REFER TO PERMEABILITY OF MAGNETIC MATERIALS	24	23	24	33	29	33	8	
C 176	C3-06 DO YOU USE OR REFER TO RESIDUAL MAGNETISM	44	46	44	33	61	67	17	
C 177	C3-07 DO YOU USE OR REFER TO MAGNETIC LINES OF FORCE OR FLUX	37	54	33	67	48	100	8	
C 178	C3-08 DO YOU USE OR REFER TO WEBER'S THEORY OF MAGNETISM	6	0	7	0	13	0	0	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032
C 179	C3-09 DO YOU USE OR REFER TO DOMAIN THEORY OF MAGNETISM	4	0	5	0	10	0	0
C 180	C3-10 DO YOU USE OR REFER TO MAGNETIC INDUCTION	29	23	31	33	35	67	13
C 181	C3-11 DO YOU USE OR REFER TO FLUX DENSITY	28	15	31	33	35	67	8
C 182	C3-12 DO YOU USE OR REFER TO THE GENERAL RULE THAT FOR MAGNETIC POLES, LIKE POLES REPEL AND UNLIKE POLES ATTRACT	59	62	58	67	68	100	38
C 183	C3-13 DO YOU USE THE LEFT HAND THUMB RULE TO FIND THE DIRECTION OF MAGNETIC FIELDS ABOUT STRAIGHT WIRES	21	23	20	33	26	67	8
C 184	C3-19 DO YOU USE THE LEFT HAND THUMB RULE TO FIND THE NORTH POLE OF A CURRENT CARRYING COIL	19	15	20	33	26	33	8
D 185	D1-01 DO YOU WORK WITH RC, LR, RCL CIRCUITS IN YOUR PRESENT JOB	49	15	56	0	52	0	58
D 186	D1-02 DO YOU USE OR REFER TO VECTORS WHEN WORKING WITH RCL CIRCUITS	13	0	16	0	23	0	4
D 187	D1-03 DO YOU USE OR REFER TO PYTHAGOREAN THEOREM WHEN WORKING WITH RCL CIRCUITS	10	0	13	0	16	0	4
D 188	D1-04 DO YOU USE OR REFER TO SINE WHEN WORKING WITH RCL CIRCUITS	9	0	11	0	16	0	4
D 189	D1-05 DO YOU USE OR REFER TO COSINE WHEN WORKING WITH RCL CIRCUITS	9	0	11	0	16	0	4
D 190	D1-06 DO YOU USE OR REFER TO TANGENT WHEN WORKING WITH RCL CIRCUITS	10	0	13	0	16	0	4
D 191	D1-07 DO YOU USE OR REFER TO WATTS WHEN WORKING WITH RCL CIRCUITS	26	15	29	0	29	0	25
D 192	D1-08 DO YOU USE OR REFER TO TRUE POWER (PT) WHEN WORKING WITH RCL CIRCUITS	21	8	24	0	29	0	8
D 193	D1-09 DO YOU USE OR REFER TO MAXIMUM POWER (PM) WHEN WORKING WITH RCL CIRCUITS	18	0	22	0	26	0	4
D 194	D1-10 DO YOU USE OR REFER TO AVERAGE POWER (PAVE) WHEN WORKING WITH RCL CIRCUITS	16	0	20	0	26	0	0
D 195	D1-11 DO YOU USE OR REFER TO APPARENT POWER (PA) WHEN WORKING WITH RCL CIRCUITS	15	8	16	0	23	0	4
D 196	D1-12 DO YOU USE OR REFER TO POWER FACTOR (PF) WHEN WORKING WITH RCL CIRCUITS	10	0	13	0	13	0	4
D 197	D1-13 DO YOU USE OR REFER TO RESONANT CIRCUITS WHEN WORKING WITH RCL CIRCUITS	21	0	25	0	26	0	21
D 198	D1-14 DO YOU USE OR REFER TO BANDWIDTH WHEN WORKING WITH RCL CIRCUITS	16	8	18	0	26	0	13
D 199	D1-15 DO YOU USE OR REFER TO SELECTIVITY WHEN WORKING WITH RCL CIRCUITS	15	0	18	0	23	0	8
D 200	D1-16 DO YOU USE OR REFER TO RESONANT FREQUENCY WHEN WORKING WITH RCL CIRCUITS	22	8	25	0	35	0	13
D 201	D1-17 DO YOU USE OR REFER TO HALF POWER POINTS WHEN WORKING WITH RCL CIRCUITS	3	0	4	0	6	0	0
D 202	D1-18 DO YOU USE OR REFER TO BANDPASS REGION WHEN WORKING WITH RCL CIRCUITS	10	8	11	0	23	0	0
D 203	D1-19 DO YOU USE OR REFER TO CIRCUIT Q WHEN WORKING WITH RCL CIRCUITS	6	0	7	0	13	0	0

RCL CIRCUITS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032
D 204	D1-20 DO YOU USE OR REFER TO TANK CIRCUITS WHEN WORKING WITH RCL CIRCUITS	25	15	27	0	39	0	13
D 205	D1-21 DO YOU DETERMINE VALUES OF TRIGONOMETRIC FUNCTIONS USING FORMULAS	6	8	5	0	10	0	4
D 206	D1-22 DO YOU DRAW VOLTAGE, CURRENT, OR IMPEDANCE VECTOR DIAGRAMS FOR CIRCUITS	6	0	7	0	10	0	0
D 207	D1-23 DO YOU CALCULATE TOTAL IMPEDANCE FOR CAPACITIVE CIRCUITS	16	8	18	0	23	0	4
D 208	D1-24 DO YOU CALCULATE PHASE ANGLES BETWEEN IMPEDANCE AND RESISTANCE IN CAPACITIVE CIRCUITS	6	0	7	0	10	0	0
D 209	D1-25 DO YOU CALCULATE TOTAL IMPEDANCE FOR SERIES RCL CIRCUITS	16	8	18	0	23	0	4
D 210	D1-26 DO YOU CALCULATE IMPEDANCE ANGLES FOR SERIES RCL CIRCUITS	10	8	11	0	16	0	0
D 211	D1-27 DO YOU CALCULATE APPARENT POWER (PA) FOR SERIES RCL CIRCUITS	12	8	13	0	23	0	0
D 212	D1-28 DO YOU CALCULATE TRUE POWER (PT) FOR SERIES RCL CIRCUITS	12	8	13	0	19	0	0
D 213	D1-29 DO YOU CALCULATE POWER FACTORS (PF) FOR SERIES RCL CIRCUITS	9	0	11	0	16	0	0
D 214	D1-30 DO YOU CALCULATE TOTAL CURRENT FOR PARALLEL RCL CIRCUITS	19	8	22	0	26	0	8
D 215	D1-31 DO YOU CALCULATE IMPEDANCE ANGLES FOR PARALLEL RCL CIRCUITS	9	0	11	0	16	0	0
D 216	D1-32 DO YOU CALCULATE TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS USING THE ASSUMED VOLTAGE METHOD	10	8	11	0	16	0	0
D 217	D1-33 DO YOU CALCULATE TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS USING OHM'S LAW	22	8	25	0	32	0	8
D 218	D1-34 DO YOU CHECK CAPACITORS USING OHMMETERS	50	23	56	0	58	0	50
D 219	D1-35 DO YOU CHECK CAPACITORS USING SUBSTITUTION	37	8	44	0	35	0	42
D 220	D1-36 DO YOU CHECK INDUCTORS USING OHMMETERS	47	15	55	0	52	0	50
D 221	D1-37 DO YOU CHECK INDUCTORS USING SUBSTITUTION	31	8	36	0	35	0	29
D 222	D1-38 DO YOU USE OR REFER TO THE GENERAL RULE THAT THETA= 0, PF = 1, AND PA = PT FOR RESONANT CIRCUITS	6	0	7	0	10	0	0
D 223	D1-39 DO YOU CALCULATE RESONANT FREQUENCIES FOR RCL CIRCUITS	12	0	15	0	16	0	4
D 224	D1-40 DO YOU USE OR REFER TO THE GENERAL RULE THAT IMPEDANCE IS MINIMUM AND CURRENT MAXIMUM AT THE RESONANT FREQUENCY FOR SERIES RCL CIRCUITS	18	0	22	0	26	0	8
D 225	D1-41 DO YOU USE OR REFER TO THE GENERAL RULE THAT LINE CURRENT IS MINIMUM AND IMPEDANCE MAXIMUM AT RESONANT FREQUENCY FOR PARALLEL RCL CIRCUITS	15	0	18	0	23	0	4
D 226	D1-42 DO YOU USE OR REFER TO THE GENERAL RULE THAT HALF POWER POINTS ARE AT 70.7 PERCENT OF THE PEAK CURRENT VALUE	10	8	11	0	13	33	4
D 227	D1-43 DO YOU USE OR REFER TO THE GENERAL RULE THAT BANDWIDTH IS INVERSELY PROPORTIONAL TO Q	9	0	11	0	16	0	4
D 228	D1-44 DO YOU DETERMINE HOW CHANGES IN FREQUENCY, RESISTANCE, CAPACITANCE, OR INDUCTANCE WILL AFFECT CURRENT OR PHASE ANGLES FOR RCL CIRCUITS	13	8	15	0	16	0	4

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
D 229	D2-01 IN YOUR PRESENT JOB, DO YOU WORK WITH, USE, OR REFER TO SERIES OR PARALLEL RESONANT CIRCUITS OR TIME CONSTANTS	16	8	18	0	29	0	8	
D 230	D2-02 DO YOU WORK WITH, USE, OR REFER TO TIME CONSTANTS	12	0	15	0	19	0	8	
D 231	D2-03 DO YOU WORK WITH, USE, OR REFER TO AVAILABLE VOLTAGE	7	0	9	0	13	0	4	
D 232	D2-04 DO YOU WORK WITH, USE, OR REFER TO TRANSIENT INTERVALS	9	0	11	0	16	0	4	SERIES AND PARALLEL RESONANCE (TIME CONSTANTS)
D 233	D2-05 DO YOU USE OR REFER TO THE GENERAL RULE THAT A CAPACITOR IS FULLY CHARGED (OR DISCHARGED) AFTER FIVE (5) TIME CONSTANTS (TC)	7	0	9	0	13	0	4	
D 234	D2-06 DO YOU USE OR REFER TO UNIVERSAL TIME CONSTANT CHARTS	3	0	4	0	6	0	0	
D 235	D2-07 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE CIRCUIT CURRENT OR COMPONENT VOLTAGES AFTER A SPECIFIC TIME FOR RC OR LR CIRCUITS	4	0	5	0	6	0	4	
D 236	D2-08 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE THE TIME REQUIRED FOR CIRCUIT CURRENT OR COMPONENT VOLTAGES TO REACH SPECIFIC VALUES FOR RC OR LR CIRCUITS	6	0	7	0	10	0	4	
D 237	D2-09 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE COMPONENT VALUES REQUIRED FOR CIRCUIT CURRENT AND COMPONENT VOLTAGES TO REACH SPECIFIC VALUES IN SPECIFIC TIMES	7	0	9	0	13	0	4	
D 238	D2-10 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT IN LR CIRCUITS REACHES ITS MINIMUM VALUE (OR ZERO) AFTER FIVE (5) TIME CONSTANTS	6	0	7	0	10	0	4	
D 239	D3-01 DO YOU WORK WITH CIRCUITS USED AS FILTERS IN YOUR PRESENT JOB	37	15	42	0	32	33	46	
D 240	D3-02 DO YOU INSPECT FILTER CIRCUITS	32	15	36	0	32	0	38	
D 241	D3-03 DO YOU CLEAN FILTER CIRCUITS	26	15	29	0	32	0	21	
D 242	D3-04 DO YOU ALIGN OR ADJUST FILTER CIRCUITS	22	15	24	0	32	0	13	
D 243	D3-05 DO YOU TROUBLESHOOT TO THE FILTER CIRCUIT LEVEL	25	8	29	0	29	0	25	FILTERS
D 244	D3-06 DO YOU TROUBLESHOOT TO COMPONENT PARTS	28	8	33	0	29	0	29	
D 245	D3-07 DO YOU REMOVE OR REPLACE THE COMPLETE FILTER CIRCUIT	29	15	33	0	29	33	29	
D 246	D3-08 DO YOU REMOVE OR REPLACE FILTER CIRCUIT COMPONENT PARTS	28	8	33	0	29	0	29	
D 247	D3-09 DO YOU WORK WITH LOW PASS FILTERS	34	8	40	0	32	33	42	
D 248	D3-10 DO YOU WORK WITH HIGH PASS FILTERS	32	8	38	0	32	33	38	
D 249	D3-11 DO YOU WORK WITH BANDPASS FILTERS	28	8	33	0	32	33	29	
D 250	D3-12 DO YOU WORK WITH BAND-REJECT FILTERS	16	8	18	0	19	33	13	
D 251	D3-13 DON'T REMEMBER WHICH TYPE OF FILTER YOU WORK WITH	9	8	9	0	10	0	4	
D 252	D3-14 DO YOU WORK WITH L-SECTION FILTER CONFIGURATION	13	0	16	0	19	0	13	
D 253	D3-15 DO YOU WORK WITH T-SECTION FILTER CONFIGURATION	10	0	13	0	16	0	8	
D 254	D3-16 DO YOU WORK WITH PI-SECTION FILTER CONFIGURATION	10	0	13	0	16	0	8	
D 255	D3-17 DON'T REMEMBER WHICH TYPE FILTER CONFIGURATION	18	15	18	0	13	33	25	
D 256	D3-18 DO THE FILTERS YOU WORK WITH USE PARALLEL RESONANT CIRCUITS	15	8	16	0	23	0	13	
D 257	D3-19 DO THE FILTERS YOU WORK WITH USE SERIES-PARALLEL CIRCUITS	19	8	22	0	29	0	13	
D 258	D3-20 DO THE FILTERS YOU WORK WITH USE SERIES RESONANT CIRCUITS	15	8	16	0	23	0	13	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		By-Task	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
D	259	D3-21 DON'T REMEMBER WHICH TYPE OF BASIC CIRCUIT	19	8	22	0	16	33	25	
D	260	D3-22 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE CAPACITANCE OR INDUCTANCE VALUES REQUIRED FOR SPECIFIC FILTERS	9	0	11	0	13	0	8	
E	261	E1-01 DO YOU WORK WITH COUPLING DEVICES IN YOUR PRESENT JOB	28	31	27	33	32	67	25	
E	262	E1-02 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH RC COUPLING	26	23	27	33	29	67	25	
E	263	E1-03 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH IMPEDANCE COUPLING	26	23	27	33	32	33	25	COUPLING
E	264	E1-04 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH TRANSFORMER COUPLING	25	31	24	33	26	67	25	
E	265	E1-05 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM RC COUPLING	25	15	27	33	29	33	25	
E	266	E1-06 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM IMPEDANCE COUPLING	24	15	25	33	29	0	25	
E	267	E1-07 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM TRANSFORMER COUPLING	24	23	24	33	26	67	21	
E	268	E1-08 DO YOU WORK WITH DIRECTLY COUPLED CIRCUITS	25	31	24	33	26	67	25	
E	269	E1-09 DO YOU WORK WITH CAPACITIVE-RESISTIVE COUPLED CIRCUITS	19	31	16	33	23	67	13	
E	270	E1-10 DO YOU WORK WITH CAPACITIVE-INDUCTIVE COUPLED CIRCUITS	18	23	16	33	23	33	13	
E	271	E1-11 DO YOU WORK WITH TRANSFORMER COUPLED CIRCUITS	21	31	18	33	19	67	21	
E	272	E1-12 DON'T REMEMBER WHICH TYPE OF COUPLING CIRCUITS	16	23	15	33	19	67	8	
E	273	E2-01 IN YOUR PRESENT JOB, DO YOU PERFORM SOLDERING TECHNIQUES OR INSPECT OR EVALUATE SOLDERED CONNECTIONS	93	85	95	33	97	100	96	
E	274	E2-02 DO YOU SELECT TYPE OF SOLDER TO USE	88	69	93	33	90	67	96	
E	275	E2-03 DO YOU ADD FLUX TO CONNECTIONS	82	77	84	33	87	100	79	
E	276	E2-04 DO YOU CLEAN CONNECTIONS USING SOLVENTS	89	69	87	33	94	100	75	
E	277	E2-05 DO YOU STRIP INSULATION FROM WIRES	94	85	96	33	100	100	96	SOLDERING
E	278	E2-06 DO YOU CONNECT OR DISCONNECT HEAT SINKS	88	77	91	33	94	100	88	
E	279	E2-07 DO YOU BEND OR SHAPE WIRES OR LEADS	94	85	96	33	100	100	96	
E	280	E2-08 DO YOU CUT WIRES	94	85	96	33	100	100	96	
E	281	E2-09 DO YOU FILE OR SHAPE SOLDERING IRON TIPS	88	69	93	33	90	100	92	
E	282	E2-10 DO YOU TIN SOLDERING IRON TIPS	93	77	96	33	97	100	96	
E	283	E2-11 DO YOU CLEAN SOLDERING IRON TIPS	94	85	96	33	100	100	96	
E	284	E2-12 DO YOU CLEAN ELECTRICAL SURFACES USING ERASERS	87	54	95	33	90	100	92	
E	285	E2-13 DO YOU TIN OR PRE-TIN CONDUCTORS	85	54	93	33	87	100	92	
E	286	E2-14 DO YOU INSPECT SOLDERED CONNECTIONS	93	85	95	33	100	100	92	
E	287	E2-15 DO YOU DESOLDER CONNECTIONS BY WICKING	66	54	69	33	74	100	54	
E	288	E2-16 DO YOU DESOLDER CONNECTIONS USING VACUUM DESOLDERING TOOLS	91	77	95	33	97	100	92	
E	289	E2-17 DO YOU CUT COMPONENT LEADS TO REMOVE COMPONENTS	63	96	67	33	68	67	63	
E	290	E2-18 DO YOU CRUSH COMPONENTS FOR REMOVAL	25	15	27	0	29	0	29	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
E 291	E2-19 DO YOU MAKE HARDWIRE CONNECTIONS	88	77	91	33	97	67	88	
E 292	E2-20 DO YOU MAKE PRINTED CIRCUIT BOARD CONNECTIONS	91	77	96	33	97	100	92	
E 293	E2-21 DO YOU SOLDER PASSIVE COMPONENTS SUCH AS RESISTORS OR CAPACITORS ON PRINTED CIRCUIT BOARDS	90	69	95	33	94	100	92	
E 294	E2-22 DO YOU SOLDER ACTIVE COMPONENTS SUCH AS SOLID-STATE DIODES OR TRANSISTORS ON PRINTED CIRCUIT BOARDS	90	69	95	33	94	100	92	
E 295	E3-01 DO YOU WORK WITH RELAYS ON YOUR PRESENT JOB	88	92	87	100	97	100	75	
E 296	E3-02 DO YOU ADJUST RELAYS	57	54	58	67	87	33	17	
E 297	E3-03 DO YOU CLEAN RELAYS	62	62	62	67	87	33	25	
E 298	E3-04 DO YOU INSPECT RELAYS	75	77	75	100	87	67	54	
E 299	E3-05 DO YOU REMOVE OR REPLACE COMPLETE RELAYS	82	85	82	67	94	100	67	RELAYS
E 300	E3-06 DO YOU REMOVE OR REPLACE PARTS OR RELAYS	53	46	55	67	81	0	13	
E 301	E3-07 DO YOU TROUBLESHOOT RELAYS	81	85	80	100	94	67	63	
E 302	E3-08 DO YOU STRAIGHTEN RELAY CONTACTS	59	54	60	67	84	67	17	
E 303	E3-09 DO YOU PERFORM TASKS ON RELAY CONTACTS	62	69	60	100	84	100	17	
E 304	E3-10 DO YOU PERFORM TASKS ON RELAY CORES	34	15	38	33	55	0	8	
E 305	E3-11 DO YOU PERFORM TASKS ON RELAY COILS	34	15	38	33	58	0	4	
E 306	E3-12 DO YOU PERFORM TASKS ON RELAY ARMATURES	51	38	55	33	84	33	8	
E 307	E3-13 DO YOU PERFORM TASKS ON RELAY SPRINGS	53	46	55	33	84	67	8	
E 308	E3-14 DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST), NORMALLY OPER (NO) SCHEMATIC SYMBOLS FOR RELAYS	69	62	71	100	77	67	54	
E 309	E3-15 DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST), NORMALLY CLOSED (NC) SCHEMATIC SYMBOLS FOR RELAYS	69	62	71	100	77	67	54	
E 310	E3-16 DO YOU USE OR REFER TO SINGLE POLE, DOUBLE THROW (SPDT) SCHEMATIC SYMBOLS FOR RELAYS	63	46	67	67	71	67	50	
E 311	E3-17 DO YOU USE OR REFER TO DOUBLE POLE, DOUBLE THROW (DPDT) SCHEMATIC SYMBOLS FOR RELAYS	63	46	67	67	71	67	50	
E 312	E3-18 DO YOU USE OR REFER TO OTHER RELAY SYMBOLS SCHEMATIC SYMBOLS FOR RELAYS	76	85	75	100	87	100	54	
E 313	E3-19 DO YOU CHECK ELECTRICAL CONTINUITY OF COILS BY MEASURING RESISTANCE	66	31	75	33	74	67	58	
F 314	F1-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH MICROPHONES	32	15	36	0	23	33	96	
F 315	F1-02 DO YOU INSPECT MICROPHONES	29	8	27	0	13	33	38	
F 316	F1-03 DO YOU CLEAN MICROPHONES	21	8	24	0	13	33	33	
F 317	F1-04 DO YOU OPERATE MICROPHONES	21	8	24	0	13	33	29	
F 318	F1-05 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS BUT DO NOT TROUBLESHOOT DOWN TO COMPONENT PARTS OR MICROPHONES	21	15	22	0	13	33	29	MICROPHONES
F 319	F1-06 DO YOU TROUBLESHOOT DOWN TO MICROPHONE PARTS	13	0	16	0	10	0	13	
F 320	F1-07 DO YOU REMOVE OR REPLACE COMPLETE MICROPHONES	25	15	27	0	16	33	38	
F 321	F1-08 DO YOU REMOVE OR REPLACE MICROPHONE PARTS	9	0	11	0	10	0	8	
F 322	F1-09 DO YOU PERFORM TASKS ON CARBON MICROPHONES	22	8	25	0	10	33	33	
F 323	F1-10 DO YOU PERFORM TASKS ON CAPACITOR MICROPHONES	3	0	4	0	3	0	4	
F 324	F1-11 DO YOU PERFORM TASKS ON CRYSTAL MICROPHONES	3	0	4	0	0	0	8	
F 325	F1-12 DO YOU PERFORM TASKS ON DYNAMIC MICROPHONES	18	15	18	0	6	33	38	
F 326	F1-13 DO YOU PERFORM TASKS ON VELOCITY RIBBON MICROPHONES	0	0	0	0	0	0	0	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
F 327	F2-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH SPEAKERS	21	15	22	0	16	33	29	
F 328	F2-02 DO YOU INSPECT SPEAKERS	16	8	18	0	6	33	29	
F 329	F2-03 DO YOU CLEAN SPEAKERS	12	8	13	0	6	33	21	
F 330	F2-04 DO YOU OPERATE SPEAKERS	13	8	15	0	6	33	21	SPEAKERS
F 331	F2-05 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS BUT DO NOT TROUBLESHOOT DOWN TO COMPONENT PARTS OF SPEAKERS	15	15	16	0	10	33	25	
F 332	F2-06 DO YOU TROUBLESHOOT DOWN TO SPEAKER PARTS	6	0	7	0	3	0	8	
F 333	F2-07 DO YOU REMOVE OR REPLACE COMPLETE SPEAKERS	18	15	18	0	10	33	29	
F 334	F2-08 DO YOU REMOVE OR REPLACE SPEAKER PARTS	4	0	5	0	3	0	8	
F 335	F2-09 DO YOU PERFORM ANY TASKS ON SPEAKER CONES	0	0	0	0	0	0	0	
F 336	F2-10 DO YOU PERFORM ANY TASKS ON SPEAKER SPIDERS	0	0	0	0	0	0	0	
F 337	F2-11 DO YOU PERFORM ANY TASKS ON SPEAKER FIELD COILS	0	0	0	0	0	0	0	
F 338	F2-12 DO YOU PERFORM ANY TASKS ON SPEAKER VOICE COILS	0	0	0	0	0	0	0	
F 339	F2-13 DO YOU PERFORM ANY TASKS ON SPEAKER PERMANENT MAGNETS	1	8	0	0	3	0	0	
F 340	F2-14 DO YOU PERFORM ANY TASKS ON SPEAKER ELECTROMAGNETS	1	0	2	0	3	0	0	
F 341	F2-15 DO YOU PERFORM ANY TASKS ON SPEAKER SOFT IRON CORES	0	0	0	0	0	0	0	
F 342	F3-01 DO YOU USE OSCILLOSCOPES IN YOUR PRESENT JOB	90	92	89	100	90	67	96	
F 343	F3-02 DO YOU USE OSCILLOSCOPES TO PERFORM OPERATIONAL CHECKS	90	92	89	67	97	67	88	
F 344	F3-03 DO YOU USE OSCILLOSCOPES TO PERFORM ALIGNMENTS OR ADJUSTMENTS	85	77	87	33	97	100	79	OSCILLOSCOPES
F 345	F3-04 DO YOU USE OSCILLOSCOPES TO TROUBLESHOOT ELECTRONIC CIRCUITS	94	92	95	100	97	100	96	
F 346	F3-05 DO YOU USE OSCILLOSCOPES TO MEASURE FREQUENCY	84	92	82	67	100	100	63	
F 347	F3-06 DO YOU USE OSCILLOSCOPES TO MEASURE TIME	87	92	85	67	100	100	71	
F 348	F3-07 DO YOU USE OSCILLOSCOPES TO OBSERVE LISAJOUS PATTERNS	38	23	42	33	55	33	17	
F 349	F3-08 DO YOU USE OSCILLOSCOPES TO OBSERVE SIGNALS WHILE UTILIZING ATTENUATOR PROBES	85	85	85	100	90	100	79	
F 350	F3-09 DO YOU USE OSCILLOSCOPES TO MAKE FREQUENCY OR TIME MEASUREMENTS USING DELAY TIME MULTIPLIERS	59	54	60	67	77	67	29	
F 351	F3-10 DO YOU USE OSCILLOSCOPES TO MEASURE AC VOLTAGE	72	62	75	100	66	67	75	
F 352	F3-11 DO YOU USE OSCILLOSCOPES TO MEASURE OR OBSERVE SIGNALS AFTER FIRST ADJUSTING THE GAIN AND DC BAL CONTROLS	51	46	53	33	61	33	46	
F 353	F3-12 DO YOU USE OSCILLOSCOPES TO MEASURE DC VOLTAGE	91	85	93	100	97	67	88	
G 354	G1-01 DO YOU WORK WITH SEMICONDUCTOR DIODES IN YOUR PRESENT JOB	88	85	89	67	90	100	88	
G 355	G1-02 DO YOU INSPECT DIODES	90	85	91	67	94	100	88	
G 356	G1-03 DO YOU REMOVE OR REPLACE DIODES	88	77	91	67	90	100	88	
G 357	G1-04 DO YOU CHECK DIODES USING AN INSTRUMENT	88	77	91	67	94	100	86	SEMICONDUCTOR DIODES
G 358	G1-05 DO YOU USE ENERGY LEVEL DIAGRAMS IN YOUR WORK WITH DIODES	4	0	5	0	10	0	0	
G 359	G1-06 DO YOU USE PN JUNCTION DIODE CHARACTERISTIC CURVES, TOGETHER WITH VALUES OF FORWARD AND REVERSE BIAS VOLTAGE, TO COMPUTE FORWARD OR REVERSE BIAS RESISTANCE	16	0	20	0	29	0	4	
G 360	G1-07 DO YOU COMPUTE FORWARD OR REVERSE BIAS RESISTANCE FOR DIODES	21	8	24	0	32	33	8	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032
G 361	61-08 DO YOU USE OR REFER TO THE GENERAL RULE THAT TEMPERATURE CAN AFFECT THE OPERATION OF DIODES	69	62	71	67	74	67	68
G 362	61-09 DO YOU IDENTIFY SEMICONDUCTOR DIODES AS OPPOSED TO OTHER ELECTRONIC COMPONENTS, SUCH AS RESISTORS, BASED ON THEIR PHYSICAL APPEARANCE	81	69	84	67	84	100	75
G 363	61-10 DO YOU REFER TO OR DO YOU DETERMINE THE GENERAL EFFECTS OF DOPING ON CURRENT FLOW	13	8	15	0	19	0	0
G 364	61-11 DO YOU USE OR REFER TO MEASUREMENTS OF FORWARD BIAS RESISTANCE	56	15	65	0	55	67	58
G 365	61-12 DO YOU USE OR REFER TO DIODE COLOR CODING	26	8	31	0	32	0	21
G 366	61-13 DO YOU USE OR REFER TO CENTRIFUGAL FORCE OF AN ELECTRON IN ORBIT AROUND A NUCLEUS	1	0	2	0	3	0	0
G 367	61-14 DO YOU USE OR REFER TO CENTRIPETAL FORCE OF AN ELECTRON IN ORBIT AROUND A NUCLEUS	1	0	2	0	3	0	0
G 368	61-15 DO YOU USE OR REFER TO DIODE NUMBERING SYSTEM, SUCH AS IN $38	66	38	73	33	61	67	71
G 369	61-16 DO YOU USE OR REFER TO KINETIC ENERGY OF AN ELECTRON MOVING IN ORBIT	1	0	2	0	3	0	0
G 370	61-17 DO YOU USE OR REFER TO POTENTIAL ENERGY OF AN ELECTRON MOVING IN ORBIT	1	0	2	0	3	0	0
G 371	61-18 DO YOU USE OR REFER TO MEASUREMENTS OF REVERSE BIAS RESISTANCE	60	15	71	0	58	67	71
G 372	61-19 DO YOU USE OR REFER TO NUMBER OF ELECTRONS IN A PARTICULAR SHELL OR ORBIT	3	0	4	0	6	0	0
G 373	61-20 DO YOU USE OR REFER TO PERMISSIBLE ENERGY LEVELS OF AN ORBITING ELECTRON	1	0	2	0	3	0	0
G 374	61-21 DO YOU USE OR REFER TO FORBIDDEN ENERGY LEVELS OF AN ORBITING ELECTRON	1	0	2	0	3	0	0
G 375	61-22 DO YOU USE OR REFER TO VALENCE ELECTRONS (THOSE IN THE OUTERMOST SHELL)	4	0	5	0	6	0	4
G 376	61-23 DO YOU USE OR REFER TO ATOMIC NUMBER (TOTAL NUMBER OF ELECTRONS IN ATOM)	4	0	5	0	6	0	4
G 377	61-24 DO YOU USE OR REFER TO SYMBOLS ON THE DIODE WHICH INDICATE THE CATHODE END	81	77	82	67	84	100	79
G 378	61-25 DO YOU NEED TO KNOW WHICH MATERIALS ARE USED IN THE CONSTRUCTION OF DIODES SUCH AS GERMANIUM OR SILICON	29	8	27	33	16	0	29
G 379	61-26 DO YOU NEED TO KNOW THAT SEMICONDUCTORS HAVE NEGATIVE TEMPERATURE COEFFICIENTS OF RESISTANCE (AS TEMPERATURE INCREASES RESISTANCE DECREASES)	37	23	40	0	32	0	38
G 380	61-27 DO YOU USE OR REFER TO PN JUNCTION DIODE CHARACTERISTIC CURVES, SUCH AS VOLTAGE - CURRENT CHARACTERISTIC CURVES (PERHAPS YOU DO THIS TO IDENTIFY POINTS OF STRUCTURAL BREAKDOWN OR OPERATING REGIONS)	13	0	16	0	19	0	4
G 381	61-28 DO YOU DETERMINE WHETHER PN JUNCTION DIODES ARE FORWARD BIASED OR REVERSE BIASED WHEN YOU READ OR INTERPRET CIRCUIT DIAGRAMS	49	23	55	0	55	0	50
G 382	61-29 DO YOU USE OR REFER TO VALENCE BAND IN SEMICONDUCTOR MATERIALS	9	8	9	0	16	0	0

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
G 383	G1-30 DO YOU USE OR REFER TO FORBIDDEN BAND IN SEMICONDUCTOR MATERIALS	7	0	9	0	13	0	0	
G 384	G1-31 DO YOU USE OR REFER TO CONDUCTION BAND IN SEMICONDUCTOR MATERIALS	9	0	11	0	13	0	0	
G 385	G1-32 DO YOU USE OR REFER TO COVALENT BONDING IN SEMICONDUCTOR MATERIALS	7	0	9	0	13	0	4	
G 386	G1-33 DO YOU USE OR REFER TO ELECTRON-HOLE PAIR CREATED IN SEMICONDUCTORS	9	0	11	0	16	0	4	
G 387	G1-34 DO YOU USE OR REFER TO ELECTRON FLOW OR HOLE FLOW IN SEMICONDUCTORS	16	0	20	0	23	0	8	
G 388	G1-35 DO YOU USE OR REFER TO DONOR IMPURITY IN SEMICONDUCTORS	7	0	9	0	13	0	4	
G 389	G1-36 DO YOU USE OR REFER TO ACCEPTOR IMPURITY IN SEMICONDUCTORS	7	0	9	0	13	0	4	
G 390	G1-37 DO YOU USE OR REFER TO P-TYPE SEMICONDUCTOR MATERIAL	22	0	27	0	32	0	13	
G 391	G1-38 DO YOU USE OR REFER TO N-TYPE SEMICONDUCTOR MATERIAL	24	0	29	0	32	0	13	
G 392	G1-39 DO YOU USE OR REFER TO MAJORITY CARRIERS IN SEMICONDUCTORS	12	0	15	0	19	0	4	
G 393	G1-40 DO YOU USE OR REFER TO MINORITY CARRIERS IN SEMICONDUCTORS	10	0	13	0	19	0	4	
G 394	G1-41 DO YOU USE OR REFER TO JUNCTION RECOMBINATION IN SEMICONDUCTORS	7	0	9	0	13	0	4	
G 395	G1-42 DO YOU USE OR REFER TO DEPLETION REGION IN SEMICONDUCTORS	9	0	11	0	16	0	4	
G 396	G1-43 DO YOU USE OR REFER TO RELATIONSHIP BETWEEN BARRIER WIDTH AND DIFFERENCE OF POTENTIAL	9	0	11	0	16	0	4	
G 397	G1-44 DO YOU USE OR REFER TO THE 10:1 BACK TO FRONT RESISTANCE RATIO FOR DIODES	32	15	36	0	29	33	46	
G 398	G1-45 DO YOU USE OR REFER TO BARRIER HEIGHT IN SEMICONDUCTORS	3	0	4	0	6	0	0	
G 399	G1-46 DO YOU USE OR REFER TO DIODE SUBSTITUTION INFORMATION	40	15	45	0	48	33	42	
G 400	G1-47 DO YOU USE OR REFER TO MAXIMUM AVERAGE FORWARD CURRENT DIODE RATINGS	12	0	15	0	19	0	4	
G 401	G1-48 DO YOU USE OR REFER TO PEAK RECURRENT FORWARD CURRENT DIODE RATINGS	12	0	15	0	19	0	4	
G 402	G1-49 DO YOU USE OR REFER TO MAXIMUM SURGE CURRENT DIODE RATINGS	13	0	16	0	19	0	8	
G 403	G1-50 DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGE DIODE RATINGS	13	0	16	0	19	0	8	
G 404	G2-01 DO YOU WORK WITH TRANSISTORS IN YOUR PRESENT JOB.	93	85	95	100	90	100	96	
G 405	G2-02 DO YOU INSPECT TRANSISTORS	91	77	95	67	94	100	92	
G 406	G2-03 DO YOU REMOVE OR REPLACE TRANSISTORS	88	69	93	67	90	100	88	
G 407	G2-04 DO YOU CHECK TRANSISTORS USING AN INSTRUMENT	91	85	93	100	94	100	88	
G 408	G2-05 DO YOU USE OR REFER TO EMITTER - BASE (EB) FORWARD AND REVERSE RESISTANCE MEASUREMENTS	82	77	84	67	84	100	79	TRANSISTORS
G 409	G2-06 DO YOU USE OR REFER TO COLLECTOR - BASE (CB) FORWARD AND REVERSE RESISTANCE MEASUREMENTS	85	77	87	67	87	100	83	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
G 410	G2-07 DO YOU USE OR REFER TO EMITTER - COLLECTOR (EC) RESISTANCE MEASUREMENTS	82	62	87	33	87	100	83	
G 411	G2-08 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE PHYSICAL BARRIER WIDTH OF THE EMITTER - BASE JUNCTION	29	0	36	0	32	0	33	
G 412	G2-09 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE PHYSICAL BARRIER WIDTH OF THE COLLECTOR - BASE JUNCTION	29	0	36	0	32	0	33	
G 413	G2-10 DO YOU USE OR REFER TO THE PHYSICAL SIZE OF THE TRANSISTOR STRUCTURE (COLLECTOR, BASE AND EMITTER)	50	23	56	0	58	33	54	
G 414	G2-11 DO YOU USE OR REFER TO LEAKAGE CURRENT (ICBO) IN A TRANSISTOR	22	8	25	0	35	0	8	
G 415	G2-12 DO YOU USE OR REFER TO TRANSISTOR SCHEMATIC SYMBOLS	96	100	95	100	100	100	92	
G 416	G2-13 DO YOU USE OR REFER TO TRANSISTOR NOTATION SUCH AS Q1, Q2, Q3, ETC	96	100	95	100	100	100	92	
G 417	G2-14 DO YOU USE OR REFER TO TRANSISTOR SUBSTITUTION INFORMATION	69	62	71	67	71	100	63	
G 418	G2-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE TRANSISTOR BASE CURRENT IB IS NORMALLY SIGNIFICANTLY SMALLER THAN THE EMITTER CURRENT IE (USUALLY IB BEING 2 TO 8 PERCENT OF IE)	40	23	44	33	48	0	42	
G 419	G2-16 DO YOU USE THE INFORMATION THAT THE EFFECT OF EMITTER BASE VOLTAGE ON BASE CURRENT IS THE CONTROLLING FACTOR FOR TRANSISTORS	43	46	42	33	48	33	33	
G 420	G2-17 DO YOU USE THE GENERAL RULE THAT LEAKAGE CURRENT (ICBO) IN A TRANSISTOR INCREASES AS TEMPERATURE INCREASES	25	31	24	33	39	0	13	
G 421	G2-18 DO YOU USE OR REFER TO TRANSISTOR CHARACTERISTIC CURVES	13	15	13	0	23	33	0	
G 422	G2-19 DO YOU USE OR REFER TO BETA TRANSISTOR GAINS	12	0	15	0	19	0	4	
G 423	G2-20 DO YOU USE OR REFER TO ALPHA TRANSISTOR GAINS	10	0	13	0	16	0	4	
G 424	G2-21 DO YOU USE OR REFER TO GAMMA TRANSISTOR GAINS	10	0	13	0	16	0	4	
G 425	G2-22 DO YOU CALCULATE BETA TRANSISTOR GAINS	6	0	7	0	13	0	0	
G 426	G2-23 DO YOU CALCULATE ALPHA TRANSISTOR GAINS	6	0	7	0	13	0	0	
G 427	G2-24 DO YOU CALCULATE GAMMA TRANSISTOR GAINS	6	0	7	0	13	0	0	
G 428	G3-01 DO YOU WORK WITH TRANSISTOR AMPLIFIERS IN YOUR PRESENT JOB	50	23	56	0	52	33	54	
G 429	G3-02 DO YOU INSPECT TRANSISTOR AMPLIFIERS	47	23	53	0	52	33	46	
G 430	G3-03 DO YOU ALIGN OR ADJUST TRANSISTOR AMPLIFIERS	34	23	36	0	48	33	13	
G 431	G3-04 DO YOU TROUBLESHOOT TO THE AMPLIFIER CIRCUIT LEVEL	47	23	53	0	52	33	46	
G 432	G3-05 DO YOU TROUBLESHOOT TO AMPLIFIER COMPONENTS	44	15	51	0	48	33	42	TRANSISTOR AMPLIFIERS
G 433	G3-06 DO YOU REMOVE OR REPLACE THE COMPLETE AMPLIFIER	47	15	55	0	52	0	50	
G 434	G3-07 DO YOU REMOVE OR REPLACE AMPLIFIER COMPONENTS	43	15	49	0	48	33	38	
G 435	G3-08 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN COLLECTOR CURRENT WHICH RESULTS FROM A CHANGE IN BASE CURRENT	19	0	24	0	35	0	4	
G 436	G3-09 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN COLLECTOR CURRENT WHICH RESULTS FROM A SPECIFIC CHANGE IN BASE CURRENT	12	0	16	0	23	0	0	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032
G 437	GJ-10 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN COLLECTOR VOLTAGE WHICH RESULTS FROM A CHANGE IN BASE CURRENT	13	0	16	0	23	0	4
G 438	GJ-11 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN COLLECTOR VOLTAGE WHICH RESULTS FROM A SPECIFIC CHANGE IN BASE CURRENT	9	0	11	0	10	0	4
G 439	GJ-12 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN BASE CURRENT WHICH RESULTS FROM AN INPUT SIGNAL	16	8	18	0	19	0	4
G 440	GJ-13 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN BASE CURRENT WHICH RESULTS FROM A SPECIFIC INPUT SIGNAL	9	0	11	0	10	0	4
G 441	GJ-14 DO YOU USE THE LOAD-LINE METHOD OF ANALYSIS IN YOUR CIRCUIT ANALYSIS (THIS METHOD REQUIRES YOU TO PLOT A LOAD-LINE ON A TRANSISTOR CHARACTERISTIC CURVE)	4	0	5	0	10	0	0
G 442	GJ-15 DO YOU USE OR REFER TO THE OPERATING POINT Q (QUIESCENT POINT) FOR A TRANSISTOR	12	0	15	0	19	0	8
G 443	GJ-16 DO YOU CALCULATE THE SPECIFIC QUIESCENT POINT FOR A PARTICULAR TRANSISTOR	7	0	9	0	10	0	8
G 444	GJ-17 DO YOU MEASURE VOLTAGE GAIN USED IN THE COMMON EMITTER CONFIGURATION	28	8	33	0	42	0	13
G 445	GJ-18 DO YOU MEASURE CURRENT GAIN USED IN THE COMMON EMITTER CONFIGURATION	25	8	29	0	39	0	8
G 446	GJ-19 DO YOU MEASURE POWER GAIN USED IN THE COMMON EMITTER CONFIGURATION	22	15	24	0	32	33	4
G 447	GJ-20 DO YOU CALCULATE THE VOLTAGE GAIN FOR SPECIFIC TRANSISTORS USING A FORMULA THAT IS, DO YOU DIVIDE THE CHANGE IN BASE-EMITTER VOLTAGE INTO THE CHANGE THE BASE COLLECTOR VOLTAGE TO DETERMINE THE VOLTAGE GAIN	4	0	5	0	10	0	0
G 448	GJ-21 DO YOU CALCULATE THE CURRENT GAIN FOR SPECIFIC TRANSISTORS USING A FORMULA THAT IS, DO YOU DIVIDE THE CHANGE IN BASE CURRENT INTO THE CHANGE IN COLLECTOR CURRENT TO DETERMINE THE CURRENT GAIN	6	0	7	0	13	0	0
G 449	GJ-22 DO YOU CALCULATE THE POWER GAIN FOR A SPECIFIC TRANSISTOR USING A FORMULA THAT IS, DO YOU MULTIPLY THE CURRENT GAIN TIMES THE VOLTAGE GAIN TO DETERMINE THE POWER GAIN	4	0	5	0	10	0	0
G 450	GJ-23 DO YOU NEED TO KNOW THAT MORE COLLECTOR CURRENT IS GENERATED WITH LESS COLLECTOR VOLTAGE AS TEMPERATURE INCREASES (THIS AFFECTS THE STATIC OPERATING POINT (Q) OF THE TRANSISTOR)	4	0	5	0	10	0	0
G 451	GJ-24 DO YOU COMPUTE THE STATIC OPERATING POINT (Q) OF A TRANSISTOR AT DIFFERENT TEMPERATURES	4	0	5	0	6	0	4
G 452	GJ-25 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH EMITTER (SWAMPING) RESISTOR STABILIZATION	22	8	25	0	32	0	17
G 453	GJ-26 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH SELF-BIAS STABILIZATION	21	8	24	0	32	0	13

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032
G 454	G3-27 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH THERMISTOR STABILIZATION	22	8	25	0	32	0	17
G 455	G3-28 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH FORWARD BIAS DIODE STABILIZATION	26	8	31	0	39	0	21
G 456	G3-29 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH REVERSE BIAS DIODE STABILIZATION	26	8	31	0	39	0	21
G 457	G3-30 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH DOUBLE DIODE STABILIZATION	15	8	16	0	23	0	8
G 458	G3-31 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM EMITTER (SWAMPING) RESISTOR STABILIZATION	26	8	31	0	32	0	25
G 459	G3-32 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM SELF-BIAS STABILIZATION	24	8	27	0	29	0	21
G 460	G3-33 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM THERMISTOR STABILIZATION	24	8	27	0	29	0	21
G 461	G3-34 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM FORWARD BIAS DIODE STABILIZATION	25	8	29	0	29	0	25
G 462	G3-35 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM REVERSE BIAS DIODE STABILIZATION	25	8	29	0	29	0	25
G 463	G3-36 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM DOUBLE DIODE STABILIZATION	13	8	15	0	19	0	13
G 464	G3-37 DO YOU IDENTIFY AMPLITUDE DISTORTION FOR TRANSISTOR CIRCUITS	15	15	15	0	23	0	8
G 465	G3-38 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF AMPLITUDE DISTORTION	21	8	24	0	26	0	17
G 466	G3-39 DO YOU IDENTIFY FREQUENCY DISTORTION FOR TRANSISTOR CIRCUITS	15	15	15	0	19	0	8
G 467	G3-40 DO YOU IDENTIFY PHASE DISTORTION FOR TRANSISTOR CIRCUITS	13	8	15	0	23	0	8
G 468	G3-41 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF PHASE DISTORTION	13	0	16	0	19	0	13
G 469	G3-42 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF FREQUENCY DISTORTION	12	8	13	0	19	0	4
G 470	G3-43 DO YOU NEED TO KNOW THE DEGENERATIVE EFFECTS ON THE CIRCUIT CAUSED BY CHANGING EMITTER RESISTANCE FOR TRANSISTOR AMPLIFIERS IN THE COMMON COLLECTOR CONFIGURATION	9	0	11	0	19	0	0
G 471	G3-44 DO YOU DETERMINE THE CLASS OF OPERATION FOR AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER CIRCUITS	10	15	9	0	13	33	0
G 472	G3-45 DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS	7	8	7	0	10	0	8
G 473	G3-46 DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL AMPLIFIERS	22	15	24	0	26	33	21
G 474	G3-47 DO YOU TROUBLESHOOT OR REPAIR COMPLEMENTARY SYMMETRY CIRCUITS	12	8	13	0	16	0	13
G 475	G3-48 DO YOU TROUBLESHOOT OR REPAIR COMPOUND-CONNECTED AMPLIFIERS	13	8	15	0	19	0	13

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 024	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
G 476	G3-49 DO YOU TROUBLESHOOT OR REPAIR CASCADE-CONNECTED AMPLIFIERS	15	8	16	0	23	0	8	
M 477	M1-01 DO YOU USE OR REFER TO VARACTORS	22	8	25	33	29	0	13	
M 478	M1-02 DO YOU USE OR REFER TO TUNNEL DIODES	26	8	31	33	32	0	25	
M 479	M1-03 DO YOU USE OR REFER TO FIELD EFFECT TRANSISTORS (FET)	34	15	38	0	39	33	33	SOLID-STATE SPECIAL
M 480	M1-04 DO YOU USE OR REFER TO UNIJUNCTION TRANSISTORS	21	8	24	0	26	0	21	
M 481	M1-05 DO YOU USE OR REFER TO ZENER DIODES	79	77	80	67	84	100	79	
M 482	M1-06 DO YOU USE OR REFER TO INTEGRATED CIRCUITS	76	77	76	67	74	100	83	PURPOSE DEVICES
M 483	M2-01 IN YOUR PRESENT JOB, DO YOU WORK WITH POWER SUPPLIES	81	92	78	67	90	67	71	
M 484	M2-02 DO YOU INSPECT POWER SUPPLIES	85	92	84	67	100	67	71	
M 485	M2-03 DO YOU CLEAN POWER SUPPLIES	85	92	84	67	100	67	71	
M 486	M2-04 DO YOU ALIGN OR ADJUST POWER SUPPLIES	84	85	84	33	100	67	71	
M 487	M2-05 DO YOU TROUBLESHOOT TO POWER SUPPLY CIRCUIT LEVEL	78	62	82	33	90	67	71	
M 488	M2-06 DO YOU TROUBLESHOOT TO POWER SUPPLY COMPONENTS	72	54	76	33	87	67	58	POWER SUPPLIES
M 489	M2-07 DO YOU REMOVE OR REPLACE COMPLETE POWER SUPPLIES	79	77	80	67	94	67	63	
M 490	M2-08 DO YOU REMOVE OR REPLACE POWER SUPPLY COMPONENTS	75	69	76	67	90	67	58	
M 491	M2-09 DO YOU WORK WITH HALF-WAVE RECTIFIERS	46	54	44	33	48	67	46	
M 492	M2-10 DO YOU WORK WITH FULL-WAVE RECTIFIERS OTHER THAN BRIDGE RECTIFIERS	53	54	53	33	65	33	46	
M 493	M2-11 DO YOU WORK WITH BRIDGE RECTIFIERS	57	46	60	0	58	67	63	
M 494	M2-12 DO YOU WORK WITH THREE-PHASE RECTIFIERS	49	38	51	67	58	0	38	
M 495	M2-13 DO YOU USE OR REFER TO INPUT VOLTAGE	79	86	78	67	94	67	63	
M 496	M2-14 DO YOU USE OR REFER TO INPUT FREQUENCY	59	62	58	33	65	33	50	
M 497	M2-15 DO YOU USE OR REFER TO PEAK OUTPUT VOLTAGE	60	69	58	33	71	67	42	
M 498	M2-16 DO YOU USE OR REFER TO AVERAGE OUTPUT VOLTAGE	59	62	58	67	74	33	38	
M 499	M2-17 DO YOU USE OR REFER TO RIPPLE AMPLITUDE	32	31	33	0	42	33	8	
M 500	M2-18 DO YOU USE OR REFER TO RIPPLE FREQUENCY	29	23	31	0	39	33	4	
M 501	M2-19 DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGE	25	15	27	0	35	33	4	
M 502	M2-20 DO YOU USE OR REFER TO SHAPE OF OUTPUT WAVEFORMS	50	54	49	33	61	33	29	
M 503	M2-21 DO YOU USE OR REFER TO EFFECTIVE OUTPUT VOLTAGE	62	69	60	67	74	33	46	
M 504	M2-22 DO YOU WORK WITH CIRCUITS WHICH EMPLOY CAPACITIVE FILTERS	54	38	58	67	61	33	58	
M 505	M2-23 DO YOU WORK WITH CIRCUITS WHICH EMPLOY INDUCTIVE FILTERS	43	38	44	67	52	33	42	
M 506	M2-24 DO YOU WORK WITH CIRCUITS WHICH EMPLOY CAPACITIVE INPUT L-TYPE FILTERS	35	23	38	33	42	33	33	
M 507	M2-25 DO YOU WORK WITH CIRCUITS WHICH EMPLOY INDUCTIVE INPUT L-TYPE FILTERS	34	23	36	33	39	33	33	
M 508	M2-26 DO YOU WORK WITH CIRCUITS WHICH EMPLOY LC PI-TYPE FILTERS	26	15	29	33	26	0	33	
M 509	M2-27 DO YOU WORK WITH CIRCUITS WHICH EMPLOY RC PI-TYPE FILTERS	29	15	33	33	26	0	42	
M 510	M2-28 DO YOU WORK WITH CIRCUITS WHICH EMPLOY DON'T REMEMBER WHICH TYPE OF FILTER	24	31	25	33	35	0	17	
M 511	M2-29 DO YOU HAVE THE OPTION OF REPLACING ONE TYPE OF FILTER WITH A DIFFERENT TYPE FILTER	6	8	5	0	10	0	0	
M 512	M3-01 DO YOU WORK WITH OSCILLATORS IN YOUR PRESENT JOB	66	54	69	33	77	33	58	OSCILLATORS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
M 513	M3-02 DO YOU INSPECT OSCILLATORS	59	46	62	33	68	33	54	
M 514	M3-03 DO YOU ALIGN OR ADJUST OSCILLATORS	47	38	49	0	65	33	29	
M 515	M3-04 DO YOU REMOVE OR REPLACE COMPLETE OSCILLATORS	57	54	58	33	65	33	54	
M 516	M3-05 DO YOU REMOVE OR REPLACE OSCILLATOR COMPONENTS	49	46	49	33	61	33	38	
M 517	M3-06 DO YOU TROUBLESHOOT TO OSCILLATOR CIRCUIT LEVEL	53	46	55	33	61	33	46	
M 518	M3-07 DO YOU TROUBLESHOOT TO OSCILLATOR COMPONENTS	49	46	49	33	61	33	33	
M 519	M3-08 DO YOU USE OR REFER TO FEEDBACK	35	31	36	0	48	33	25	
M 520	M3-09 DO YOU USE OR REFER TO FREQUENCY DETERMINING DEVICES (FDD)	32	31	33	0	42	33	21	
M 521	M3-10 DO YOU USE OR REFER TO AMPLITUDE STABILITY	29	31	29	0	39	33	17	
M 522	M3-11 DO YOU USE OR REFER TO FREQUENCY STABILITY	38	38	38	33	48	33	21	
M 523	M3-12 DO YOU USE OR REFER TO DAMPING	18	23	16	0	29	33	4	
M 524	M3-13 DO YOU USE OR REFER TO REGENERATIVE FEEDBACK	32	31	33	0	45	33	21	
M 525	M3-14 DO YOU USE OR REFER TO PIEZOELECTRIC EFFECT	12	15	11	0	19	33	0	
M 526	M3-15 DO YOU USE OR REFER TO CRITICAL DAMPING	9	0	11	0	19	0	0	
M 527	M3-16 DO YOU USE OR REFER TO UNDER DAMPING	13	15	13	0	29	0	0	
M 528	M3-17 DO YOU USE OR REFER TO OVER DAMPING	13	15	13	0	29	0	0	
M 529	M3-18 DO YOU WORK WITH OSCILLATORS WHICH USE LC TANK CIRCUITS AS FDD	34	15	38	0	39	33	38	
M 530	M3-19 DO YOU WORK WITH OSCILLATORS WHICH USE RC NETWORKS AS FDD	37	23	40	0	45	33	38	
M 531	M3-20 DO YOU WORK WITH OSCILLATORS WHICH USE CRYSTALS AS FDD	26	23	27	0	42	0	17	
M 532	M3-21 DO YOU WORK WITH OSCILLATORS WHICH USE DON'T REMEMBER WHICH TYPE OF FDD	13	15	13	0	16	0	13	
M 533	M3-22 DO YOU WORK WITH SERIES HARTLEY SINUSOIDAL OSCILLATORS	29	15	33	0	35	33	25	
M 534	M3-23 DO YOU WORK WITH SHUNT HARTLEY SINUSOIDAL OSCILLATORS	26	8	29	0	32	0	21	
M 535	M3-24 DO YOU WORK WITH COLPITTS SINUSOIDAL OSCILLATORS	28	8	33	0	35	33	21	
M 536	M3-25 DO YOU WORK WITH CLAPP SINUSOIDAL OSCILLATORS	13	0	16	0	23	0	8	
M 537	M3-26 DO YOU WORK WITH BUTLER SINUSOIDAL OSCILLATORS	12	0	15	0	23	0	4	
M 538	M3-27 DO YOU WORK WITH DON'T REMEMBER WHICH TYPE OF OSCILLATORS	31	23	33	0	39	0	25	
I 539	I1-01 DO YOU WORK WITH MULTIVIBRATORS IN YOUR PRESENT JOB	63	38	69	33	68	67	58	
I 540	I1-02 DO YOU INSPECT WAVE GENERATING OR SHAPING CIRCUITS	56	38	60	33	61	33	54	
I 541	I1-03 DO YOU ALIGN OR ADJUST WAVE GENERATING OR SHAPING CIRCUITS	37	31	38	0	55	33	17	
I 542	I1-04 DO YOU CALIBRATE WAVE GENERATING OR SHAPING CIRCUITS	32	31	33	0	55	33	8	
I 543	I1-05 DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING CIRCUITS	54	38	58	33	61	67	54	MULTIVIBRATORS
I 544	I1-06 DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING CIRCUIT COMPONENTS	44	31	47	0	58	33	33	
I 545	I1-07 DO YOU REMOVE OR REPLACE COMPLETE WAVE GENERATING OR SHAPING CIRCUITS	50	31	55	33	58	67	46	
I 546	I1-08 DO YOU REMOVE OR REPLACE WAVE GENERATING OR SHAPING COMPONENTS	44	31	47	33	58	67	33	
I 547	I1-09 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN LC TANK CIRCUITS	26	15	29	0	26	33	33	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	Dy-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
I 548	11-10 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN RC NETWORKS	32	15	36	0	32	33	42	
I 549	11-11 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN CRYSTALS	15	15	15	0	26	0	4	
I 550	11-12 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN DON'T REMEMBER WHICH TYPE OF FDD	18	15	18	0	29	0	8	
I 551	11-13 DO YOU WORK WITH ASTABLE MULTIVIBRATORS	53	31	58	33	61	67	50	
I 552	11-14 DO YOU WORK WITH MONOSTABLE MULTIVIBRATORS	54	31	60	33	65	67	50	
I 553	11-15 DO YOU WORK WITH BISTABLE MULTIVIBRATORS	59	31	65	33	68	67	54	
I 554	11-16 DO YOU WORK WITH DON'T REMEMBER WHICH TYPE MULTIVIBRATORS	12	23	9	0	16	33	4	
I 555	12-01 DO YOU WORK WITH LIMITERS OR CLAMPERS IN YOUR PRESENT JOB	25	15	27	0	32	33	21	
I 556	12-02 DO YOU WORK WITH SERIES DIODE LIMITERS	19	15	20	0	32	33	8	
I 557	12-03 DO YOU WORK WITH SHUNT DIODE LIMITERS	12	8	13	0	23	0	4	
I 558	12-04 DO YOU WORK WITH LIMITERS WITH BIAS	12	8	13	0	26	0	0	
I 559	12-05 DO YOU WORK WITH ZENER DIODE LIMITERS	24	15	25	0	32	33	17	LIMITERS AND CLAMPERS
I 560	12-06 DO YOU WORK WITH TRANSISTOR LIMITERS	19	15	20	0	32	33	8	
I 561	12-07 DO YOU WORK WITH DON'T KNOW WHICH TYPE OF LIMITERS	10	8	11	0	13	0	13	
I 562	12-08 DO YOU WORK WITH BASIC DIODE CLAMPING CIRCUITS	18	15	18	0	32	33	4	
I 563	12-09 DO YOU WORK WITH DIODE CLAMPING CIRCUITS WITH BIAS	13	8	15	0	29	0	0	
I 564	12-10 DO YOU WORK WITH DON'T KNOW WHICH TYPE OF CLAMPING CIRCUIT	12	8	13	0	13	0	17	
I 565	13-01 IN YOUR PRESENT JOB, DO YOU WORK ON EQUIPMENT WHICH CONTAINS ELECTRON TUBES	22	8	25	33	35	0	0	
I 566	13-02 DO YOU CHECK ELECTRON TUBES TO SEE IF THEY ARE GOOD	21	8	24	33	35	0	0	
I 567	13-03 DO YOU USE TUBE TESTERS TO CHECK ELECTRON TUBES	10	0	13	0	19	0	0	
I 568	13-04 DO YOU USE MULTIMETERS TO CHECK ELECTRON TUBES	19	8	22	33	32	0	0	
I 569	13-05 DO YOU USE SCOPES TO CHECK ELECTRON TUBES	13	0	16	0	23	0	0	ELECTRON TUBES
I 570	13-06 DO YOU USE SUBSTITUTION TO CHECK ELECTRON TUBES	22	8	25	33	35	0	0	
I 571	13-07 DO YOU USE OR REFER TO CUTOFF	13	8	15	33	23	0	0	
I 572	13-08 DO YOU USE OR REFER TO PEAK INVERSE VOLTAGE RATING	9	0	11	0	19	0	0	
I 573	13-09 DO YOU USE OR REFER TO PEAK CURRENT RATING	9	0	11	0	19	0	0	
I 574	13-10 DO YOU USE OR REFER TO TRANSIT TIME	6	0	7	0	13	0	0	
I 575	13-11 DO YOU USE OR REFER TO PLATE DISSIPATION RATING	9	8	9	33	16	0	0	
I 576	13-12 DO YOU USE OR REFER TO SATURATION	15	6	16	33	23	0	0	
I 577	13-13 DO YOU USE OR REFER TO DC PLATE RESISTANCE	9	0	11	0	16	0	0	
I 578	13-14 DO YOU COMPUTE ACTUAL VALUES OF THE DC PLATE RESISTANCE FOR ELECTRON TUBES	6	0	7	0	13	0	0	
I 579	13-15 DO YOU USE OR REFER TO PLATE VOLTAGE	21	8	24	33	35	0	0	
I 580	13-16 DO YOU USE OR REFER TO PLATE CURRENT	19	8	22	33	32	0	0	
I 581	13-17 DO YOU USE OR REFER TO GRID VOLTAGE	21	8	24	33	35	0	0	
I 582	13-18 DO YOU USE OR REFER TO GRID CURRENT	19	8	22	33	32	0	0	
I 583	13-19 DO YOU USE OR REFER TO CATHODE VOLTAGE	19	8	22	33	35	0	0	
I 584	13-20 DO YOU USE OR REFER TO CATHODE CURRENT	18	8	20	33	32	0	0	
I 585	13-21 DO YOU USE OR REFER TO THE TRIODE AMPLIFICATION FACTOR (THE AMPLIFICATION FACTOR FOR TRIODES IS DEFINED AS THE RATIO OF CHANGE IN PLATE VOLTAGE TO A CHANGE IN GRID VOLTAGE)	3	0	4	0	6	0	0	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
I 586	I3-22 DO YOU CALCULATE ACTUAL VALUES OF TRIODE AMPLIFICATION FACTORS	1	0	2	0	3	0	0	
I 587	I3-23 DO YOU USE OR REFER TO MULTIGRID (TETRODE, PENTODE, ETC) AMPLIFICATION FACTORS	1	0	2	0	3	0	0	
I 588	I3-24 DO YOU USE OR REFER TO ELECTRON TUBE TRANSCONDUCTANCE (G, WHICH IS MEASURED IN MHOS)	1	0	2	0	3	0	0	
I 589	I3-25 DO YOU CALCULATE ACTUAL VALUES OF ELECTRON TUBE TRANSCONDUCTANCES	1	0	2	0	3	0	0	
I 590	I3-26 DO YOU USE OR REFER TO THE ELECTRON TUBE PARAMETER CALLED AC PLATE RESISTANCE	3	0	4	0	6	0	0	
I 591	I3-27 DO YOU CALCULATE ACTUAL VALUES OF AC PLATE RESISTANCE	3	0	4	0	6	0	0	
I 592	I3-28 DO YOU USE OR REFER TO ELECTRON TUBE INTERELECTRODE CAPACITANCE	1	0	2	0	3	0	0	
I 593	I3-29 DO YOU USE OR REFER TO CHARACTERISTIC CURVES IN YOUR WORK WITH ELECTRON TUBES	4	0	5	0	10	0	0	
I 594	I3-30 DO YOU USE CHARACTERISTIC CURVES TO SELECT PLATE VOLTAGE FOR A SPECIFIED BIAS	7	0	9	0	16	0	0	
I 595	I3-31 DO YOU USE CHARACTERISTIC CURVES TO SELECT PLATE CURRENT FOR A SPECIFIED BIAS	7	0	9	0	16	0	0	
I 596	I3-32 DO YOU USE CHARACTERISTIC CURVES TO SELECT BIAS REQUIRED FOR CUTOFF	7	0	9	0	16	0	0	
I 597	I3-33 DO YOU USE CHARACTERISTIC CURVES TO SELECT BIAS REQUIRED FOR SATURATION	7	0	9	0	16	0	0	
I 598	I3-34 DO YOU USE OR REFER TO ELECTRON TUBE AMPLIFIER GAIN	9	0	11	0	19	0	0	
I 599	I3-35 DO YOU USE OR REFER TO ELECTRON TUBE AMPLIFIER EFFICIENCY	7	0	9	0	16	0	0	
I 600	I3-36 DO YOU USE TEST TUBE CHECKERS TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN	10	0	13	0	19	0	0	
I 601	I3-37 DO YOU USE MULTIMETERS TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN	9	0	11	0	13	0	0	
I 602	I3-38 DO YOU USE OSCILLOSCOPES TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN	9	0	11	0	13	0	0	
I 603	I3-39 DO YOU USE CHARACTERISTIC CURVES TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN	6	0	7	0	13	0	0	
I 604	I3-40 DO YOU CALCULATE ANY ELECTRON TUBE CAPACITANCES SUCH AS INPUT CAPACITANCE	1	0	2	0	3	0	0	
I 605	I3-41 DO YOU USE OR REFER TO TUBE SOCKET NOTATION	18	0	22	0	32	0	0	
I 606	I3-42 DO YOU USE OR REFER TO PIN NUMBERING SYSTEMS	19	0	24	0	35	0	0	
I 607	I3-43 DO YOU USE OR REFER TO THE TYPE OF MATERIAL OR THE OPERATING TEMPERATURE OF THE EMITTING SURFACE IN THE ELECTRON TUBES YOU WORK ON	3	0	4	0	6	0	0	
I 608	I3-44 DO YOU USE OR REFER TO TUBE SUBSTITUTION MATERIAL SUCH AS MANUALS OR CHARTS	13	8	15	33	23	0	0	
J 609	J1-01 DO YOU WORK WITH ELECTRON TUBE AMPLIFIERS OR CIRCUITS IN YOUR PRESENT JOB	7	0	9	0	6	0	8	ELECTRON TUBE AMPLIFIERS AND CIRCUITS
J 610	J1-02 DO YOU DETERMINE THE CLASS OF OPERATION FOR ELECTRON TUBE AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER CIRCUITS	4	0	5	0	6	0	0	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
J 611	J1-03 DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS	1	0	2	0	3	0	0	
J 612	J1-04 DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL AMPLIFIERS	1	0	2	0	3	0	0	
J 613	J1-05 DO YOU TROUBLESHOOT OR REPAIR COMPOUND-CONNECTED AMPLIFIERS	1	0	2	0	3	0	0	
J 614	J1-06 DO YOU TROUBLESHOOT OR REPAIR CASCADE-CONNECTED AMPLIFIERS	1	0	2	0	3	0	0	
J 615	J1-07 DO YOU TROUBLESHOOT OR REPAIR DON'T KNOW WHICH TYPE OF AMPLIFIER	7	0	9	0	6	0	8	
J 616	J2-01 DO YOU WORK WITH GAS TUBES (HOT CATHODE OR COLD CATHODE)	6	0	7	0	10	0	0	
J 617	J2-02 DO YOU WORK WITH CATHODE-RAY TUBES	10	0	13	0	13	0	0	
J 618	J2-03 DO YOU USE OR REFER TO THE CHARACTERISTICS OF BEAM POWER TUBES	0	0	0	0	0	0	0	SPECIAL PURPOSE ELECTRON TUBES
J 619	J2-04 DO YOU TROUBLESHOOT OR REPAIR CIRCUITS IN WHICH BEAM POWER TUBES ARE USED	0	0	0	0	0	0	0	
J 620	J2-05 DO YOU USE OR REFER TO THE CHARACTERISTICS OF THYRATRONS	0	0	0	0	0	0	0	
J 621	J2-06 DO YOU TROUBLESHOOT OR REPAIR CIRCUITS IN WHICH THYRATRONS ARE USED	0	0	0	0	0	0	0	
J 622	J2-07 DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTRON GUNS OF CATHODE-RAY TUBES (CRT)	9	0	11	0	16	0	0	
J 623	J2-08 DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTROMAGNETIC DEFLECTION SYSTEMS OF CATHODE-RAY TUBES (CRT)	7	0	9	0	16	0	0	
J 624	J2-09 DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTROSTATIC DEFLECTION SYSTEMS OF CATHODE-RAY TUBES (CRT)	7	0	9	0	16	0	0	
J 625	J2-10 DO YOU USE OR REFER TO PHOSPHOR SCREENS	13	0	16	0	23	33	0	
J 626	J2-11 DO YOU USE OR REFER TO AQUADAG COATINGS	3	0	4	0	6	0	0	
J 627	J2-12 DO YOU USE OR REFER TO ELECTRON OPTICS	3	0	4	0	6	0	0	
J 628	J2-13 DO YOU USE OR REFER TO PERSISTENCE	3	0	4	0	6	0	0	
J 629	J2-14 DO YOU USE OR REFER TO DECAY TIMES	3	0	4	0	6	0	0	
J 630	J2-15 DO YOU USE OR REFER TO FLUORESCENCE	6	0	7	0	13	0	0	
J 631	J2-16 DO YOU USE OR REFER TO PHOSPHORESCENCE	7	0	9	0	13	0	0	
J 632	J3-01 DO YOU WORK ON TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB	16	15	16	0	19	0	17	
J 633	J3-02 DO YOU PERFORM TASKS ON FREQUENCY CONVERTERS	10	15	9	0	16	0	4	
J 634	J3-03 DO YOU PERFORM TASKS ON FREQUENCY MIXERS	7	15	5	0	13	0	0	HETERODYNING, MODULATION, AND DEMODULATION
J 635	J3-04 DO YOU USE OR REFER TO THE HETERODYNING OF SIGNALS IN YOUR WORK WITH TRANSMIT OR RECEIVE SYSTEMS	3	0	4	0	6	0	0	
J 636	J3-05 DO YOU PERFORM TASKS ON REACTANCE MODULATORS	3	0	4	0	6	0	0	
J 637	J3-06 DO YOU PERFORM TASKS ON MODULATED OSCILLATORS	10	15	9	0	16	0	4	
K 638	K1-01 DO YOU WORK ON AM TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB	1	0	2	0	0	0	4	
K 639	K1-02 DO YOU INSPECT AM TRANSMIT OR RECEIVE SYSTEMS	1	0	2	0	0	0	4	AM SYSTEMS
K 640	K1-03 DO YOU CLEAN AM TRANSMIT OR RECEIVE SYSTEMS	1	0	2	0	0	0	4	
K 641	K1-04 DO YOU ALIGN OR ADJUST AM TRANSMIT OR RECEIVE SYSTEMS	1	0	2	0	0	0	4	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
K 692	K1-05 DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE SYSTEMS	1	0	2	0	0	0	4	
K 693	K1-06 DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE COMPONENTS	1	0	2	0	0	0	4	
K 694	K1-07 DO YOU REMOVE OR REPLACE AM TRANSMIT OR RECEIVE SYSTEMS	1	0	2	0	0	0	4	
K 695	K1-08 DO YOU REMOVE OR REPLACE AM TRANSMIT OR RECEIVE COMPONENTS	1	0	2	0	0	0	4	
K 696	K1-09 DO YOU PERFORM TASKS ON RF OSCILLATORS	0	0	0	0	0	0	0	
K 697	K1-10 DO YOU PERFORM TASKS ON RF AMPLIFIERS	0	0	0	0	0	0	0	
K 698	K1-11 DO YOU PERFORM TASKS ON AUDIO AMPLIFIERS	3	0	4	0	0	0	8	
K 699	K1-12 DO YOU PERFORM TASKS ON POWER AMPLIFIERS	1	0	2	0	0	0	4	
K 650	K1-13 DO YOU PERFORM TASKS ON LOCAL OSCILLATORS	3	0	4	0	0	0	8	
K 651	K1-14 DO YOU PERFORM TASKS ON IF AMPLIFIERS	1	0	2	0	0	0	4	
K 652	K1-15 DO YOU PERFORM TASKS ON DETECTORS	3	0	4	0	0	0	8	
K 653	K1-16 DO YOU PERFORM TASKS ON DON'T REMEMBER WHICH AM STAGE	1	0	2	0	3	0	0	
K 654	K1-17 DO YOU USE OR REFER TO AMPLITUDE STABILIZATION IN TRANSMITTERS	0	0	0	0	0	0	0	
K 655	K1-18 DO YOU USE OR REFER TO FREQUENCY STABILIZATION IN TRANSMITTERS	0	0	0	0	0	0	0	
K 656	K1-19 DO YOU USE OR REFER TO SENSITIVITY OF RECEIVERS	0	0	0	0	0	0	0	
K 657	K1-20 DO YOU USE OR REFER TO SELECTIVITY OF RECEIVERS	0	0	0	0	0	0	0	
K 658	K1-21 DO YOU USE OR REFER TO 2ND HARMONIC DISTORTION	0	0	0	0	0	0	0	
K 659	K1-22 DO YOU USE OR REFER TO BANDPASS DISTORTION	0	0	0	0	0	0	0	
K 660	K1-23 DO YOU USE OR REFER TO SQUARE LAW DISTORTION	0	0	0	0	0	0	0	
K 661	K1-24 DO YOU USE OR REFER TO CO-CHANNEL INTERFERENCE	0	0	0	0	0	0	0	
K 662	K1-25 DO YOU USE OR REFER TO IMAGE FREQUENCIES IN RECEIVERS	0	0	0	0	0	0	0	
K 663	K1-26 DO YOU USE OR REFER TO SIGNAL TO IMAGE RATIOS OR IMAGE REJECTION RATIOS	0	0	0	0	0	0	0	
K 664	K1-27 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH AM TRANSMITTER SCHEMATIC DIAGRAMS	1	0	2	0	0	0	4	
K 665	K1-28 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH AM RECEIVER SCHEMATIC DIAGRAMS	1	0	2	0	0	0	4	
K 666	K2-01 DO YOU WORK WITH FM TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB	4	8	4	0	3	0	8	
K 667	K2-02 DO YOU INSPECT FM TRANSMIT OR RECEIVE SYSTEMS	1	8	0	0	3	0	0	
K 668	K2-03 DO YOU CLEAN FM TRANSMIT OR RECEIVE SYSTEMS	1	8	0	0	3	0	0	
K 669	K2-04 DO YOU ALIGN FM TRANSMIT OR RECEIVE SYSTEMS	1	8	0	0	3	0	0	FM SYSTEMS
K 670	K2-05 DO YOU TROUBLESHOOT TO FM TRANSMIT OR RECEIVE SYSTEMS	1	8	0	0	3	0	0	
K 671	K2-06 DO YOU TROUBLESHOOT TO FM TRANSMIT OR RECEIVE COMPONENTS	1	8	0	0	3	0	0	
K 672	K2-07 DO YOU REMOVE OR REPLACE FM TRANSMIT OR RECEIVE SYSTEMS	0	0	0	0	0	0	0	
K 673	K2-08 DO YOU REMOVE OR REPLACE FM TRANSMIT OR RECEIVE COMPONENTS	1	8	0	0	3	0	0	
K 674	K2-09 DO YOU PERFORM TASKS ON AUDIO AMPLIFIERS	3	8	2	0	3	0	4	
K 675	K2-10 DO YOU PERFORM TASKS ON FREQUENCY MULTIPLIERS	3	8	2	0	3	0	4	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
K 676	K2-11 DO YOU PERFORM TASKS ON DRIVERS (INTERMEDIATE AMPLIFIERS)	1	0	2	0	0	0	4	
K 677	K2-12 DO YOU PERFORM TASKS ON POWER AMPLIFIERS	1	8	0	0	3	0	0	
K 678	K2-13 DO YOU PERFORM TASKS ON RF AMPLIFIERS	1	8	0	0	3	0	0	
K 679	K2-14 DO YOU PERFORM TASKS ON FREQUENCY CONVERTERS	3	8	2	0	3	0	4	
K 680	K2-15 DO YOU PERFORM TASKS ON IF AMPLIFIERS	1	0	2	0	0	0	4	
K 681	K2-16 DO YOU PERFORM TASKS ON LIMITERS	3	8	2	0	3	0	4	
K 682	K2-17 DO YOU PERFORM TASKS ON FREQUENCY DISCRIMINATORS	3	8	2	0	3	0	4	
K 683	K2-18 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SCHEMATIC DIAGRAMS OF FM TRANSMITTERS	3	8	2	0	3	0	4	
K 684	K2-19 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SCHEMATIC DIAGRAMS OF FM RECEIVERS	3	8	2	0	3	0	4	
K 685	K3-01 DO YOU CONVERT DECIMAL (BASE 10) NUMBERS TO OCTAL (BASE 8) NUMBERS	56	62	55	33	61	100	38	
K 686	K3-02 DO YOU CONVERT DECIMAL NUMBERS TO BINARY (BASE 2) NUMBERS	76	69	78	67	81	100	67	
K 687	K3-03 DO YOU CONVERT OCTAL NUMBERS TO DECIMAL NUMBERS	59	69	56	33	68	100	38	NUMBERING SYSTEMS
K 688	K3-04 DO YOU CONVERT OCTAL NUMBERS TO BINARY NUMBERS	57	69	55	33	68	100	33	
K 689	K3-05 DO YOU CONVERT BINARY NUMBERS TO DECIMAL NUMBERS	79	77	80	67	87	100	67	
K 690	K3-06 DO YOU CONVERT BINARY NUMBERS TO OCTAL NUMBERS	59	69	56	33	71	100	33	
K 691	K3-07 DO YOU ADD BINARY NUMBERS TO GET A SUM	60	69	58	33	77	100	33	
K 692	K3-08 DO YOU SUBTRACT BINARY NUMBERS USING THE END-AROUND-CARRY METHOD	38	54	35	0	52	100	13	
K 693	K3-09 DO YOU SUBTRACT BINARY NUMBERS USING THE DIRECT SUBTRACTION METHOD	46	46	45	0	61	67	25	
K 694	K3-10 DO YOU ADD OCTAL NUMBERS TO GET A SUM	51	62	49	33	68	100	21	
L 695	L1-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS RELATING TO LOGIC FUNCTIONS	82	85	82	67	90	67	79	
L 696	L1-02 DO YOU CONSTRUCT TRUTH TABLES FOR AND LOGIC SYMBOLS OR GATES	60	54	62	33	68	33	50	
L 697	L1-03 DO YOU CONSTRUCT TRUTH TABLES FOR OR LOGIC SYMBOLS OR GATES	59	46	62	0	68	33	50	LOGIC FUNCTIONS
L 698	L1-04 DO YOU CONSTRUCT TRUTH TABLES FOR AND OR OR LOGIC SYMBOLS WITH STATE INDICATORS	59	46	62	0	68	33	50	
L 699	L1-05 DO YOU CONSTRUCT TRUTH TABLES FOR EXCLUSIVE OR LOGIC SYMBOLS OR GATES	59	46	62	0	68	33	50	
L 700	L1-06 DO YOU USE OR REFER TO TRUTH TABLES FOR AND LOGIC SYMBOLS OR GATES	72	62	75	0	84	67	63	
L 701	L1-07 DO YOU USE OR REFER TO TRUTH TABLES FOR OR LOGIC SYMBOLS OR GATES	72	62	75	0	84	67	63	
L 702	L1-08 DO YOU USE OR REFER TO TRUTH TABLES FOR AND OR OR LOGIC SYMBOLS WITH STATE INDICATORS	74	62	76	0	84	67	67	
L 703	L1-09 DO YOU USE OR REFER TO TRUTH TABLES FOR EXCLUSIVE OR LOGIC SYMBOLS	69	62	71	0	77	67	63	
L 704	L1-10 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR AND GATES	82	69	86	0	90	67	83	
L 705	L1-11 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR OR GATES	82	69	85	0	90	67	83	
L 706	L1-12 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR NAND OR NOR GATES	81	85	80	33	90	67	75	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
L 707	L1-13 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR EXCLUSIVE OR GATES	78	69	80	0	87	67	75	
L 708	L2-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS RELATING TO BOOLEAN EQUATIONS, LOGIC DIAGRAMS, OR LOGIC CIRCUITS	66	62	67	67	84	67	46	
L 709	L2-02 DO YOU DRAW LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUITS	25	0	31	0	32	0	21	BOOLEAN EQUATIONS
L 710	L2-03 DO YOU CONSTRUCT TRUTH TABLES FOR CURRENT MODE LOGIC (CML) CIRCUITS	12	0	15	0	16	0	8	
L 711	L2-04 DO YOU DRAW LOGIC DIAGRAMS FROM GIVEN BOOLEAN EQUATIONS	35	23	38	33	48	33	13	
L 712	L2-05 DO YOU MEASURE INPUTS OR OUTPUTS OF LOGIC GATES	69	69	69	67	84	33	54	
L 713	L2-06 DO YOU DEVELOP OR ANALYZE BOOLEAN EQUATIONS IN THE PROCESS OF TROUBLESHOOTING DIGITAL CIRCUITS	41	38	42	33	58	33	17	
L 714	L2-07 DO YOU ANALYZE LOGIC CIRCUITS BY USING BOOLEAN ALGEBRA	41	38	42	33	52	67	17	
L 715	L2-08 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUIT GATES	32	8	38	0	39	0	38	
L 716	L2-09 DO YOU USE OR REFER TO TRUTH TABLES FOR CURRENT MODE LOGIC (CML) CIRCUITS	15	8	16	0	16	0	17	
L 717	L2-10 DO YOU USE OR REFER TO LOGIC DIAGRAMS CONSISTING OF MORE THAN ONE GATE	65	54	67	33	77	67	50	
L 718	L2-11 DO YOU COMPUTE SUM AND CARRY EXPRESSIONS FOR SERIAL HALF OR FULL ADDER LOGIC DIAGRAMS	22	8	25	0	32	0	17	
L 719	L2-12 DO YOU TRACE DATA FLOW THROUGH PARALLEL FULL ADDER LOGIC DIAGRAMS	28	15	31	0	39	0	21	
L 720	L2-13 DO YOU WORK WITH ASTABLE (FREE RUNNING) MULTIVIBRATORS	60	54	62	67	77	33	46	
L 721	L2-14 DO YOU WORK WITH BISTABLE (FLIP-FLOP) MULTIVIBRATORS	66	54	69	67	84	33	50	
L 722	L2-15 DO YOU WORK WITH MONOSTABLE (ONE-SHOT) MULTIVIBRATORS	63	54	65	67	84	67	42	
L 723	L2-16 DO YOU USE OR REFER TO FLIP-FLOP MULTIVIBRATOR SYMBOLS	68	62	69	33	84	67	50	
L 724	L2-17 DO YOU USE OR REFER TO SINGLE-SHOT MULTIVIBRATOR SYMBOLS	60	54	62	33	84	33	42	
L 725	L2-18 DO YOU USE OR REFER TO FLIP-FLOP CIRCUIT DIAGRAMS	71	69	71	67	87	67	50	
L 726	L2-19 DO YOU USE OR REFER TO FLIP-FLOP TRUTH TABLES	63	69	62	67	84	67	33	
L 727	L2-20 DO YOU USE OR REFER TO COMPLEMENTED FLIP-FLOP LOGIC SYMBOLS	53	38	56	0	71	0	38	
L 728	L2-21 DO YOU USE OR REFER TO COMPLEMENTING FLIP-FLOP LOGIC SYMBOLS	54	38	58	0	74	0	42	
L 729	L2-22 DO YOU MEASURE OUTPUT WAVESHAPES OF LOGIC CIRCUITS	63	69	62	67	77	33	50	
L 730	L2-23 DO YOU TRACE DATA FLOW THROUGH COMPLEMENTED FLIP-FLOP SCHEMATIC DIAGRAMS	50	38	53	33	65	0	38	
L 731	L2-24 DO YOU TRACE DATA FLOW THROUGH COMPLEMENTING FLIP-FLOP SCHEMATIC DIAGRAMS	51	38	55	33	65	0	46	
L 732	L2-25 DO YOU CONSTRUCT TRUTH TABLES FOR J-K FLIP-FLOP LOGIC SYMBOLS	34	0	42	0	42	33	21	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	By-Tsk	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
L 733	L3-01 DO YOU WORK WITH DIGITAL COUNTERS IN YOUR PRESENT JOB	72	69	73	100	71	67	67	
L 734	L3-02 DO YOU USE OR REFER TO UP-COUNTERS	66	62	67	100	74	33	54	
L 735	L3-03 DO YOU USE OR REFER TO DOWN-COUNTERS	63	54	65	67	74	33	50	
L 736	L3-04 DO YOU USE OR REFER TO SERIAL COUNTERS	68	69	67	100	71	67	54	COUNTERS
L 737	L3-05 DO YOU USE OR REFER TO PARALLEL COUNTERS	63	62	64	67	74	67	42	
L 738	L3-06 DO YOU USE OR REFER TO RING COUNTERS	59	54	60	100	71	33	33	
L 739	L3-07 DO YOU USE OR REFER TO DECADE COUNTERS	32	31	33	33	45	33	17	
L 740	L3-08 DO YOU USE OR REFER TO COUNT DETECT CIRCUITS	44	38	45	33	52	67	29	
L 741	L3-09 DO YOU USE OR REFER TO DOWN CLOCKS	50	38	53	33	68	33	25	
L 742	L3-10 DO YOU USE OR REFER TO UP CLOCKS	50	31	55	0	71	33	25	
L 743	L3-11 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF UP-COUNTERS HAVING COMPLEMENTED FLIP-FLOPS	56	46	58	67	65	0	46	
L 744	L3-12 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SERIAL UP- OR DOWN-COUNTERS HAVING COMPLEMENTING FLIP-FLOPS	54	38	58	67	65	0	46	
L 745	L3-13 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF DECADE COUNTERS	34	38	33	67	45	33	17	
L 746	L3-14 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF RING COUNTERS	57	46	60	100	65	33	38	
L 747	L3-15 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SERIAL UP-COUNTERS FEEDING A PARALLEL STORAGE REGISTER	54	46	56	67	65	67	38	
L 748	L3-16 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SHIFT REGISTERS	69	62	71	100	71	67	58	
L 749	L3-17 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF OTHER TYPE OF COUNTERS	44	38	45	67	48	33	29	
L 750	L3-18 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR UP-COUNTERS HAVING COMPLEMENTED FLIP-FLOPS	47	38	49	67	55	0	38	
L 751	L3-19 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR SERIAL UP- OR DOWN-COUNTERS HAVING COMPLEMENTING FLIP-FLOPS	51	31	56	33	61	33	42	
L 752	L3-20 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR SERIAL UP-COUNTERS FEEDING A PARALLEL STORAGE REGISTERS	51	31	56	33	58	67	42	
L 753	L3-21 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR OTHER TYPES OF COUNTERS	46	23	51	33	45	33	46	
L 754	L3-22 DO YOU CONSTRUCT TRUTH TABLES FROM LOGIC DIAGRAMS OF DECADE COUNTERS	24	15	25	33	39	0	4	
L 755	L3-23 DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP IN RING COUNTERS FOR SPECIFIC INPUT PULSES	56	62	55	100	68	67	29	
L 756	L3-24 DO YOU DETERMINE THE APPROPRIATE AND GATE NECESSARY IN COUNT DETECT CIRCUITS TO INDICATE A REQUIRED COUNT	54	46	56	33	55	67	50	
M 757	M1-01 DO YOU WORK WITH SAWTOOTH WAVE GENERATORS	34	23	36	0	45	33	13	
M 758	M1-02 DO YOU WORK WITH TRAPEZOIDAL WAVE GENERATORS	16	15	16	0	19	33	8	
M 759	M1-03 DO YOU WORK WITH PULSED OSCILLATORS WITH REGENERATIVE FEEDBACK	34	23	34	0	45	33	25	TIMING CIRCUITS
M 760	M1-04 DO YOU WORK WITH PULSED OSCILLATORS WITHOUT REGENERATIVE FEEDBACK	32	23	35	0	39	33	25	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	Dy-Tsk	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
M 761	M1-05 DO YOU WORK WITH BLOCKING OSCILLATORS	32	23	35	0	38	67	33	
M 762	M1-06 DO YOU USE OR REFER TO RISE TIME	49	38	51	0	61	100	25	
M 763	M1-07 DO YOU USE OR REFER TO FALL OR FLYBACK TIME	40	31	42	0	55	100	25	
M 764	M1-08 DO YOU USE OR REFER TO SWEEP TIME	50	46	51	0	65	100	25	
M 765	M1-09 DO YOU USE OR REFER TO ELECTRICAL LENGTH OF SAWTOOTH WAVEFORMS	28	15	31	0	39	33	8	
M 766	M1-10 DO YOU USE OR REFER TO PHYSICAL LENGTH OF SAWTOOTH WAVEFORMS	24	15	26	0	32	33	8	
M 767	M1-11 DO YOU USE OR REFER TO LINEAR SLOPE OF SAWTOOTH WAVEFORMS	13	15	13	0	19	33	4	
M 768	M1-12 DO YOU USE OR REFER TO GATE LENGTH OF SAWTOOTH WAVEFORMS	18	23	16	0	26	33	4	
M 769	M2-01 DO YOU USE SIGNAL GENERATORS IN YOUR PRESENT JOB	57	54	58	0	65	67	54	
M 770	M2-02 DO YOU PERFORM OPERATIONAL CHECKS WHILE USING SIGNAL GENERATORS	54	54	55	0	61	67	50	
M 771	M2-03 DO YOU PERFORM PERIODIC MAINTENANCE SUCH AS ADJUSTING, ALIGNING, OR CALIBRATING WHILE USING SIGNAL GENERATORS	46	54	44	0	55	67	33	USE OF SIGNAL GENERATORS
M 772	M2-04 DO YOU TROUBLESHOOT TO AN ASSEMBLY OR SUBASSEMBLY WHILE USING SIGNAL GENERATORS	41	54	38	0	42	67	38	
M 773	M2-05 DO YOU TROUBLESHOOT TO THE SMALLEST REPLACEABLE COMPONENT WHILE USING SIGNAL GENERATORS	32	38	31	0	32	67	29	
M 774	M2-06 DO YOU USE AUDIO SINE-WAVE GENERATORS	41	15	47	0	48	33	42	
M 775	M2-07 DO YOU USE AUDIO NON-SINUSOIDAL WAVE GENERATORS SUCH AS SQUARE WAVE, TRIANGLE, PULSE, OR SPIKE	12	15	11	0	10	33	17	
M 776	M2-08 DO YOU USE RF GENERATORS LESS THAN 1,000 MH	4	8	4	0	6	0	4	
M 777	M2-09 DO YOU USE RF GENERATORS GREATER THAN 1,000 MH	1	0	2	0	3	0	0	
M 778	M2-10 DO YOU USE OTHER SPECIAL PURPOSE OR MULTI-FUNCTION GENERATORS	19	31	16	0	29	0	8	
M 779	M3-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH ALTERNATING CURRENT OR DIRECT CURRENT MOTORS OR GENERATORS	24	8	27	0	26	0	21	
M 780	M3-02 DO YOU INSPECT MOTORS	21	8	24	0	23	0	17	
M 781	M3-03 DO YOU CLEAN OR LUBRICATE MOTORS	19	8	22	0	23	0	17	
M 782	M3-04 DO YOU OPERATE MOTORS	21	8	24	0	23	0	21	
M 783	M3-05 DO YOU REMOVE OR REPLACE COMPLETE MOTORS	19	8	22	0	23	0	17	MOTORS AND GENERATORS
M 784	M3-06 DO YOU REMOVE OR REPLACE MOTOR PARTS	13	0	16	0	16	0	13	
M 785	M3-07 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS OF MOTORS	21	8	24	0	23	0	21	
M 786	M3-08 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF MOTORS	12	0	15	0	16	0	8	
M 787	M3-09 DO YOU PERFORM ANY TASKS ON FIELD COILS	7	0	9	0	16	0	0	
M 788	M3-10 DO YOU PERFORM ANY TASKS ON ARMATURES	7	0	9	0	13	0	0	
M 789	M3-11 DO YOU PERFORM ANY TASKS ON ROTORS	9	0	11	0	16	0	0	
M 790	M3-12 DO YOU PERFORM ANY TASKS ON BRUSHES	7	0	9	0	13	0	0	
M 791	M3-13 DO YOU PERFORM ANY TASKS ON SLIP RINGS	6	0	7	0	13	0	0	
M 792	M3-14 DO YOU PERFORM ANY TASKS ON COMMUTATORS	6	0	7	0	13	0	0	
M 793	M3-15 DO YOU PERFORM ANY TASKS ON POLE PIECES	6	0	7	0	13	0	0	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
N 794	M3-16 DO YOU DETERMINE OR MEASURE THE MAGNITUDE OF THE FORCE OR TORQUE CREATED BY A MOTOR	3	0	4	0	6	0	0	
N 795	M3-17 DO YOU DETERMINE OR MEASURE THE DIRECTION OF THE MECHANICAL FORCE OR TORQUE CREATED BY A MOTOR	7	8	7	0	13	0	4	
N 796	M3-18 DO YOU DETERMINE OR MEASURE THE MAGNITUDE OR DIRECTION OF THE INDUCED VOLTAGE IN MOTORS	3	0	4	0	6	0	0	
N 797	M3-19 DO YOU WORK WITH SYNCHRONOUS MOTORS	7	8	7	0	16	0	0	
N 798	M3-20 DO YOU WORK WITH INDUCTION MOTORS	7	8	7	0	10	0	8	
N 799	M3-21 DO YOU WORK WITH SPLIT-PHASE MOTORS	4	0	5	0	10	0	0	
N 800	M3-22 DO YOU WORK WITH SOME COMBINATION OF THE ABOVE MOTORS	7	8	7	0	13	0	0	
N 801	M3-23 DO YOU INSPECT GENERATORS	9	8	9	0	13	0	4	
N 802	M3-24 DO YOU CLEAN OR LUBRICATE GENERATORS	4	0	5	0	10	0	0	
N 803	M3-25 DO YOU OPERATE GENERATORS	6	0	7	0	10	0	0	
N 804	M3-26 DO YOU REMOVE OR REPLACE COMPLETE GENERATORS	3	0	4	0	6	0	0	
N 805	M3-27 DO YOU REMOVE OR REPLACE GENERATOR PARTS	3	0	4	0	6	0	0	
N 806	M3-28 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS OF GENERATORS	3	0	4	0	6	0	0	
N 807	M3-29 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF GENERATORS	3	0	4	0	6	0	0	
N 808	N1-01 DO YOU WORK WITH METERS IN YOUR PRESENT JOB	75	46	82	33	81	67	71	
N 809	N1-02 DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF PERMANENT MAGNETS	16	8	18	0	29	33	4	
N 810	N1-03 DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF MOVING COILS	25	8	29	0	39	33	8	
N 811	N1-04 DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF SPIRAL SPRINGS	15	8	16	0	23	67	4	METER MOVEMENTS
N 812	N1-05 DO YOU READ METER SCALES	76	54	82	67	81	67	71	
N 813	N1-06 DO YOU EXTEND THE RANGE OF AMMETERS	40	31	42	33	35	67	33	
N 814	N1-07 DO YOU ZERO OHMMETERS	75	54	80	67	81	67	67	
N 815	N1-08 DO YOU ZERO AMMETERS	38	15	44	33	39	0	33	
N 816	N1-09 DO YOU EXTEND THE RANGE OF VOLTMETERS	44	31	47	33	45	67	33	
N 817	N1-10 DO YOU USE OR REFER TO VOLTMETER SENSITIVITY (EXPRESSED IN UNITS OF OHMS PER VOLT)	43	38	44	0	61	33	17	
N 818	N2-01 DO YOU WORK WITH SATURABLE REACTORS OR MAGNETIC AMPLIFIERS IN YOUR PRESENT JOB	7	0	9	0	10	0	4	
N 819	N2-02 DO YOU INSPECT MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	4	0	5	0	10	0	0	SATURABLE REACTORS
N 820	N2-03 DO YOU CLEAN MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	4	0	5	0	10	0	0	AND MAGNETIC AMPLIFIERS
N 821	N2-04 DO YOU ADJUST MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	1	0	2	0	3	0	0	
N 822	N2-05 DO YOU TROUBLESHOOT MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	6	0	7	0	10	0	4	
N 823	N2-06 DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	6	0	7	0	10	0	4	
N 824	N2-07 DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIER OR SATURABLE REACTOR COMPONENTS	4	0	5	0	6	0	4	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
N	825	N2-08 DO YOU USE OR REFER TO HYSTERESIS CURVES OR LOOPS	6	0	7	0	10	0	4	
N	826	N2-09 DO YOU INTERPRET SCHEMATIC DRAWINGS TO DEVELOP OUTPUT WAVEFORMS ACROSS REACTOR WINDINGS OR LOAD RESISTORS OF SINGLE WINDING SATURABLE REACTORS	3	0	4	0	6	0	0	
N	827	N2-10 DO YOU MEASURE OUTPUT WAVEFORMS ACROSS REACTOR WINDINGS OR LOAD RESISTORS OF SINGLE WINDING SATURABLE REACTORS	3	0	4	0	6	0	0	
N	828	N2-11 DO YOU INTERPRET SCHEMATIC DRAWINGS TO DEVELOP OUTPUT WAVEFORMS FOR MAGNETIC AMPLIFIERS	6	0	7	0	10	0	4	
N	829	N2-12 DO YOU USE OR REFER TO COERCIVE FORCE IN SATURABLE REACTORS	1	0	2	0	3	0	0	
N	830	N2-13 DO YOU USE OR REFER TO RESIDUAL MAGNETISM IN SATURABLE REACTORS	6	0	7	0	10	0	4	
N	831	N2-14 DO YOU USE OR REFER TO FLUX DENSITY IN SATURABLE REACTORS	4	0	5	0	10	0	0	
N	832	N2-15 DO YOU USE OR REFER TO POINT OF SATURATION IN SATURABLE REACTORS	4	0	5	0	10	0	0	
N	833	N2-16 DO YOU USE OR REFER TO SATURABLE REACTOR SCHEMATIC SYMBOLS	4	0	5	0	10	0	0	
N	834	N3-01 DO YOU WORK WITH WAVESHAPING CIRCUITS IN YOUR PRESENT JOB	43	23	47	0	48	100	38	
N	835	N3-02 DO YOU USE OR REFER TO TRANSIENT INTERVALS	24	23	24	0	33	67	8	
N	836	N3-03 DO YOU USE OR REFER TO PULSE WIDTH (PW)	41	23	45	0	45	100	38	
N	837	N3-04 DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT)	37	15	42	0	45	67	33	
N	838	N3-05 DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY (PRF)	32	23	35	0	42	100	21	
N	839	N3-06 DO YOU USE OR REFER TO DIFFERENTIATING CIRCUITS	26	23	27	0	35	67	17	WAVESHAPING CIRCUITS
N	840	N3-07 DO YOU USE OR REFER TO INTEGRATING CIRCUITS	29	23	31	0	39	67	21	
N	841	N3-08 DO YOU USE OR REFER TO THE CLASSIFICATION OF TIME CONSTANTS (TC) AS LONG, MEDIUM, OR SHORT	24	15	25	0	35	67	8	
N	842	N3-09 DO YOU DETERMINE WHETHER AN LR OR RC CIRCUIT IS DIFFERENTIATING OR INTEGRATING BASED ON THE TIME CONSTANT AND OUTPUT CONFIGURATION	7	0	9	0	16	0	0	
N	843	N3-10 DO YOU WORK WITH SQUARE WAVE GENERATORS	34	15	38	0	42	67	29	
N	844	N3-11 DO YOU WORK WITH RECTANGULAR WAVE GENERATORS	10	0	13	0	13	33	8	
O	845	O1-01 DO YOU WORK ON SINGLE SIDEBAND SYSTEMS IN YOUR PRESENT JOB	0	0	0	0	0	0	0	
O	846	O1-02 DO YOU INSPECT SSB TRANSMIT OR RECEIVE SYSTEMS	0	0	0	0	0	0	0	
O	847	O1-03 DO YOU CLEAN SSB TRANSMIT OR RECEIVE SYSTEMS	0	0	0	0	0	0	0	
O	848	O1-04 DO YOU ALIGN SSB TRANSMIT OR RECEIVE SYSTEMS	0	0	0	0	0	0	0	
O	849	O1-05 DO YOU TROUBLESHOOT TO SSB TRANSMIT OR RECEIVE SYSTEMS	0	0	0	0	0	0	0	SINGLE SIDEBAND SYSTEMS
O	850	O1-06 DO YOU TROUBLESHOOT TO SSB TRANSMIT OR RECEIVE COMPONENTS	0	0	0	0	0	0	0	
O	851	O1-07 DO YOU REMOVE OR REPLACE SSB TRANSMIT OR RECEIVE SYSTEMS	0	0	0	0	0	0	0	
O	852	O1-08 DO YOU REMOVE OR REPLACE SSB TRANSMIT OR RECEIVE COMPONENTS	0	0	0	0	0	0	0	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032
0 853	01-09 DO YOU PERFORM TASKS ON SSB AUDIO AMPLIFIERS	0	0	0	0	0	0	0
0 854	01-10 DO YOU PERFORM TASKS ON SSB BALANCED MODULATORS	0	0	0	0	0	0	0
0 855	01-11 DO YOU PERFORM TASKS ON SSB CARRIER OSCILLATORS	0	0	0	0	0	0	0
0 856	01-12 DO YOU PERFORM TASKS ON SSB LC FILTERS	0	0	0	0	0	0	0
0 857	01-13 DO YOU PERFORM TASKS ON SSB CRYSTAL FILTERS	0	0	0	0	0	0	0
0 858	01-14 DO YOU PERFORM TASKS ON SSB MECHANICAL FILTERS	0	0	0	0	0	0	0
0 859	01-15 DO YOU PERFORM TASKS ON SSB OSCILLATORS	0	0	0	0	0	0	0
0 860	01-16 DO YOU PERFORM TASKS ON SSB MIXERS	0	0	0	0	0	0	0
0 861	01-17 DO YOU PERFORM TASKS ON SSB DRIVERS	0	0	0	0	0	0	0
0 862	01-18 DO YOU PERFORM TASKS ON SSB POWER AMPLIFIERS	0	0	0	0	0	0	0
0 863	01-19 DO YOU PERFORM TASKS ON SSB RF AMPLIFIERS	0	0	0	0	0	0	0
0 864	01-20 DO YOU PERFORM TASKS ON SSB FREQUENCY CONVERTERS	0	0	0	0	0	0	0
0 865	01-21 DO YOU PERFORM TASKS ON SSB IF AMPLIFIERS	0	0	0	0	0	0	0
0 866	01-22 DO YOU PERFORM TASKS ON SSB DEMODULATORS	0	0	0	0	0	0	0
0 867	01-23 DO YOU PERFORM TASKS ON SSB DON'T REMEMBER WHICH SSB SYSTEM STAGES	0	0	0	0	0	0	0
0 868	01-24 DO YOU USE OR REFER TO SELECTIVE FADING	0	0	0	0	0	0	0
0 869	01-25 DO YOU USE OR REFER TO PEAK POWER	0	0	0	0	0	0	0
0 870	01-26 DO YOU USE OR REFER TO FREQUENCY STABILITY	0	0	0	0	0	0	0
0 871	01-27 DO YOU USE OR REFER TO RESPONSE CURVES FOR BANDWIDTH FILTERS	0	0	0	0	0	0	0
0 872	01-28 DO YOU CALCULATE PEAK POWER OR EFFECTIVE POWER OF SSB TRANSMITTERS	0	0	0	0	0	0	0
0 873	01-29 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SSB TRANSMITTER SCHEMATIC DIAGRAMS	0	0	0	0	0	0	0
0 874	01-30 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SSB RECEIVER SCHEMATIC DIAGRAMS	0	0	0	0	0	0	0
0 875	02-01 DO YOU WORK ON PULSE MODULATION SYSTEMS IN YOUR PRESENT JOB	21	8	24	0	16	33	33
0 876	02-02 DO YOU INSPECT PULSE MODULATION SYSTEMS	16	8	18	0	16	0	25
0 877	02-03 DO YOU CLEAN PULSE MODULATION SYSTEMS	12	8	13	0	16	0	13
0 878	02-04 DO YOU ALIGN PULSE MODULATION SYSTEMS	7	8	7	0	16	0	0
0 879	02-05 DO YOU TROUBLESHOOT TO PULSE MODULATION SYSTEMS	18	8	20	0	16	0	29
0 880	02-06 DO YOU TROUBLESHOOT TO PULSE MODULATION SYSTEM COMPONENTS	15	8	16	0	16	0	21
0 881	02-07 DO YOU REMOVE OR REPLACE PULSE MODULATION SYSTEMS	13	8	15	0	16	0	17
0 882	02-08 DO YOU REMOVE OR REPLACE PULSE MODULATION SYSTEM COMPONENTS	15	8	16	0	16	0	21
0 883	02-09 DO YOU WORK ON PULSE-AMPLITUDE MODULATION (PAM) SYSTEMS	16	8	18	0	13	33	25
0 884	02-10 DO YOU WORK ON PULSE-DURATION MODULATION (PDM) SYSTEMS	7	8	7	0	10	33	4
0 885	02-11 DO YOU WORK ON PULSE-POSITION MODULATION (PPM) SYSTEMS	13	8	15	0	10	33	21
0 886	02-12 DO YOU WORK ON PULSE-CODE MODULATION (PCM) SYSTEMS	1	0	2	0	3	0	0
0 887	02-13 DO YOU WORK ON LINE PULSING MODULATION SYSTEMS	3	8	2	0	6	0	0
0 888	02-14 DO YOU WORK ON DON'T REMEMBER WHICH TYPE OF MODULATION SYSTEM	6	8	5	0	13	0	0

PULSE MODULATION SYSTEMS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
0 889	02-15 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM POWER SUPPLIES	10	8	11	0	16	0	8	
0 890	02-16 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM CHARGING CHOKES AND CHARGING DIODES	3	0	4	0	6	0	0	
0 891	02-17 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM PULSE FORMING NETWORKS	13	8	15	0	13	33	17	
0 892	02-18 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM TIMERS	16	8	18	0	16	0	25	
0 893	02-19 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM SWITCHES SUCH AS GAS THYRATRONS	1	0	2	0	3	0	0	
0 894	02-20 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM PULSE TRANSFORMERS	6	8	5	0	10	0	4	
0 895	02-21 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM TRANSMITTER TUBES	1	0	2	0	3	0	0	
0 896	02-22 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM RF AMPLIFIERS	3	8	2	0	6	0	0	
0 897	02-23 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM FREQUENCY CONVERTERS	10	8	11	0	13	0	13	
0 898	02-24 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM IF AMPLIFIERS	1	0	2	0	3	0	0	
0 899	02-25 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM DETECTORS	9	8	9	0	10	33	8	
0 900	02-26 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM VIDEO AMPLIFIERS	1	0	2	0	3	0	0	
0 901	02-27 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM POWER VIDEO AMPLIFIERS	1	0	2	0	3	0	0	
0 902	02-28 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM DON'T REMEMBER WHICH PULSE MODULATION SYSTEM STAGES	4	8	4	0	6	0	4	
0 903	02-29 DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY (PRF)	10	8	11	0	13	33	8	
0 904	02-30 DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT)	10	8	11	0	13	33	8	
0 905	02-31 DO YOU USE OR REFER TO PULSE WIDTH (PW)	15	8	16	0	16	33	17	
0 906	02-32 DO YOU USE OR REFER TO PULSE SHAPE	15	8	16	0	16	33	17	
0 907	02-33 DO YOU USE OR REFER TO PEAK POWER	9	8	9	0	16	0	4	
0 908	02-34 DO YOU USE OR REFER TO AVERAGE POWER	6	8	5	0	13	0	0	
0 909	02-35 DO YOU CALCULATE PULSE RECURRENCE TIME (PRT) OR PULSE RECURRENCE FREQUENCY (PRF)	3	0	4	0	6	0	0	
0 910	02-36 DO YOU MEASURE PULSE RECURRENCE TIME (PRT) OR PULSE RECURRENCE FREQUENCY (PRF)	9	0	11	0	13	0	8	
0 911	02-37 DO YOU USE FORMULAS TO CALCULATE AVERAGE POWER OR PEAK POWER OF PULSE MODULATION TRANSMIT SYSTEMS	3	0	4	0	6	0	0	
0 912	02-38 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE MODULATION TRANSMITTER SCHEMATIC DIAGRAMS	12	8	13	0	16	0	13	
0 913	02-39 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE MODULATION RECEIVER SCHEMATIC DIAGRAMS	12	8	13	0	16	33	8	
0 914	03-01 DO YOU WORK WITH ANTENNAS IN YOUR PRESENT JOB	0	0	0	0	0	0	0	ANTENNAS
0 915	03-02 DO YOU INSPECT ANTENNAS	0	0	0	0	0	0	0	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032
0 916	03-03 DO YOU CLEAN ANTENNAS	0	0	0	0	0	0	0
0 917	03-04 DO YOU PHYSICALLY ALIGN ANTENNAS	0	0	0	0	0	0	0
0 918	03-05 DO YOU ELECTRICALLY ALIGN ANTENNAS	0	0	0	0	0	0	0
0 919	03-06 DO YOU TROUBLESHOOT TO ANTENNAS	0	0	0	0	0	0	0
0 920	03-07 DO YOU TROUBLESHOOT TO ANTENNA COMPONENTS	0	0	0	0	0	0	0
0 921	03-08 DO YOU REMOVE OR INSTALL ANTENNAS	0	0	0	0	0	0	0
0 922	03-09 DO YOU REMOVE OR REPLACE COMPONENTS OF ANTENNAS	0	0	0	0	0	0	0
0 923	03-10 DO YOU USE OR REFER TO TECHNICAL DATA CONTAINING REPRESENTATIONS OF E OR ELECTRIC FIELD LINES	0	0	0	0	0	0	0
0 924	03-11 DO YOU USE OR REFER TO TECHNICAL DATA CONTAINING REPRESENTATIONS OF H OR MAGNETIC FIELD LINES	0	0	0	0	0	0	0
0 925	03-12 DO YOU DETERMINE THE DIRECTION OF THE MAGNETIC LINES IN RELATION TO THE ELECTRIC LINES OF FORCE FOR ANTENNAS	0	0	0	0	0	0	0
0 926	03-13 DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE OF CORRECT LENGTH (HALF-WAVE) ACT AS INDUCTIVE LOADS TO THE GENERATOR	0	0	0	0	0	0	0
0 927	03-14 DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE LONGER THAN A HALF-WAVE ACT AS INDUCTIVE LOADS TO THE GENERATOR	0	0	0	0	0	0	0
0 928	03-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE SHORTER THAN A HALF-WAVE ACT AS CAPACITIVE LOADS TO THE GENERATOR	0	0	0	0	0	0	0
0 929	03-16 DO YOU WORK WITH HERTZ ANTENNAS	0	0	0	0	0	0	0
0 930	03-17 DO YOU WORK WITH MARCONI ANTENNAS	0	0	0	0	0	0	0
0 931	03-18 DO YOU WORK WITH BROADSIDE ARRAYS	0	0	0	0	0	0	0
0 932	03-19 DO YOU WORK WITH END-FIRE ARRAYS	0	0	0	0	0	0	0
0 933	03-20 DO YOU WORK WITH CARDIOID ARRAYS	0	0	0	0	0	0	0
0 934	03-21 DO YOU WORK WITH COLLINEAR ARRAYS	0	0	0	0	0	0	0
0 935	03-22 DO YOU USE OR REFER TO THE TERM ELECTROMAGNETIC INDUCTION FIELDS WHEN WORKING WITH ANTENNAS	0	0	0	0	0	0	0
0 936	03-23 DO YOU MEASURE ELECTROMAGNETIC INDUCTION FIELDS OF ANTENNAS	0	0	0	0	0	0	0
0 937	03-24 DO YOU USE OR REFER TO THE TERM ELECTROMAGNETIC RADIATION FIELDS WHEN WORKING WITH ANTENNAS	0	0	0	0	0	0	0
0 938	03-25 DO YOU MEASURE ELECTROMAGNETIC RADIATION FIELDS OF ANTENNAS	0	0	0	0	0	0	0
0 939	03-26 DO YOU USE OR REFER TO THE TIME PHASE OF ELECTRIC (E) AND MAGNETIC (H) COMPONENTS IN ANTENNA RADIATION	0	0	0	0	0	0	0
0 940	03-27 DO YOU USE OR REFER TO THE TIME PHASE OF ELECTRIC (E) AND MAGNETIC (H) COMPONENTS IN ANTENNA INDUCTION FIELD	0	0	0	0	0	0	0
0 941	03-28 ARE ANY OF THE ANTENNAS YOU WORK ON LINEARLY POLARIZED	0	0	0	0	0	0	0
0 942	03-29 ARE ANY OF THE ANTENNAS YOU WORK ON CIRCULARLY POLARIZED	0	0	0	0	0	0	0
0 943	03-30 DO YOU MEASURE OR DETERMINE THE POLARITY OF ANTENNAS YOU WORK ON	0	0	0	0	0	0	0
0 944	03-31 DO YOU CONSTRUCT, OR MAKE THE CALCULATIONS NECESSARY TO CONSTRUCT, ANTENNAS OF CORRECT LENGTH FOR SPECIFIC WAVELENGTHS	0	0	0	0	0	0	0

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032
O 945	03-32 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS	0	0	0	0	0	0	0
O 946	03-33 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS SERVING AS DIRECTORS	0	0	0	0	0	0	0
O 947	03-34 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS SERVING AS REFLECTORS	0	0	0	0	0	0	0
O 948	03-35 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN DON'T REMEMBER WHAT KIND OF ELEMENTS	0	0	0	0	0	0	0
O 949	03-36 DO YOU WORK ON UNIDIRECTIONAL ANTENNAS	0	0	0	0	0	0	0
O 950	03-37 DO YOU WORK ON BIDIRECTIONAL ANTENNAS	0	0	0	0	0	0	0
O 951	03-38 DO YOU WORK ON DON'T REMEMBER THE DIRECTIONALITY	0	0	0	0	0	0	0
O 952	03-39 DO YOU WORK WITH ROTAR ANTENNA ARRAYS	0	0	0	0	0	0	0
P 953	P1-01 IN YOUR PRESENT JOB DO YOU WORK WITH TRANSMISSION LINES (TRANSMISSION LINES ARE DEFINED TO INCLUDE LEADS BETWEEN RECEIVERS AND ANTENNAS, TELEPHONE LEADS, AS WELL AS HIGH VOLTAGE POWER LINES, ETC. DO NOT CONSIDER WAVEGUIDES AS TRANSMISSION LINES	46	31	49	0	39	100	67
P 954	P1-02 DO YOU REFER TO OR USE COPPER LOSS OR I2R LOSS IN TRANSMISSION LINES	1	0	2	0	3	0	0
P 955	P1-03 DO YOU REFER TO OR USE SKIN EFFECTS OF HIGH FREQUENCY CURRENTS IN TRANSMISSION LINES	0	0	0	0	0	0	0
P 956	P1-04 DO YOU REFER TO OR USE RADIATION LOSS IN TRANSMISSION LINES	1	0	2	0	0	33	0
P 957	P1-05 DO YOU USE OR REFER TO DIELECTRIC LOSS IN TRANSMISSION LINES	1	0	2	0	3	0	0
P 958	P1-06 DO YOU USE OR REFER TO LEAKAGE LOSSES IN TRANSMISSION LINES	4	0	5	0	10	0	0
P 959	P1-07 DO YOU WORK WITH TWISTED PAIR TRANSMISSION LINES	35	23	38	0	23	67	58
P 960	P1-08 DO YOU WORK WITH TWIN LEAD TRANSMISSION LINES	29	15	33	0	26	0	46
P 961	P1-09 DO YOU WORK WITH OPEN TWO-WIRE TRANSMISSION LINES	21	8	24	0	19	0	29
P 962	P1-10 DO YOU WORK WITH FLEXIBLE COAXIAL CABLE TRANSMISSION LINES	21	8	24	0	23	33	25
P 963	P1-11 DO YOU WORK WITH RIGID COAXIAL CABLE TRANSMISSION LINES	7	8	7	0	10	0	8
P 964	P1-12 DO YOU TROUBLESHOOT TRANSMISSION LINES	37	15	42	0	23	33	67
P 965	P1-13 DO YOU ANALYZE VOLTAGE OR CURRENT WAVEFORMS IN TRANSMISSION LINES TO DETERMINE THE TYPE OF TERMINATION (OPEN, SHORTED, CAPACITIVE, INDUCTIVE)	7	15	5	0	13	0	4
P 966	P1-14 DO YOU SELECT APPROPRIATE TRANSMISSION LINES TERMINATIONS TO ACHIEVE DESIRED WAVEFORMS	1	0	2	0	3	0	0
P 967	P1-15 DO YOU USE OR REFER TO SCHEMATIC SYMBOLS FOR LINE TERMINATIONS IN TERMS OF CIRCUIT TERMINATIONS	12	15	11	0	16	33	8
P 968	P1-16 DO YOU MEASURE STANDING WAVE RATIOS (SR) OF TRANSMISSION LINES	0	0	0	0	0	0	0
P 969	P1-17 DO YOU CALCULATE STANDING WAVE RATIOS (SWR) OF TRANSMISSION LINES	0	0	0	0	0	0	0
P 970	P1-18 DO YOU PERFORM THE CALCULATIONS NECESSARY TO DETERMINE THE IMPEDANCE AND LENGTH OF QUARTER - WAVELENGTH MATCHING TRANSFORMERS TO MATCH TRANSMISSION LINES TO LOADS	3	8	2	0	6	0	0

TRANSMISSION LINES

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
P 971	P1-19 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING MATCHING TRANSFORMERS	4	0	5	0	6	0	0	
P 972	P1-20 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING DELTA MATCHING	1	0	2	0	3	0	0	
P 973	P1-21 DO YOU SELECT THE TYPE OF TRANSMISSION LINE NEEDED FOR PARTICULAR JOBS WITHOUT REFERRING TO TECHNICAL DATA	6	0	7	0	6	0	8	
P 974	P1-22 DO YOU USE OR REFER TO THE TERM CHARACTERISTIC IMPEDANCE (ZO) OF TRANSMISSION LINES	1	0	2	0	3	0	0	
P 975	P1-23 DO YOU CALCULATE THE CHARACTERISTIC IMPEDANCE (ZO) OF TRANSMISSION LINES	1	0	2	0	3	0	0	
P 976	P1-24 DO YOU USE OR REFER TO THE TERM CUTOFF FREQUENCY OF TRANSMISSION LINES	4	0	5	0	6	33	0	
P 977	P1-25 DO YOU USE OR REFER TO THE TERM VELOCITY FACTOR (K) OF TRANSMISSION LINES	1	0	2	0	3	0	0	
P 978	P1-26 DO YOU COMPUTE THE ELECTRICAL LENGTH OF TRANSMISSION LINES FOR PARTICULAR FREQUENCIES	1	0	2	0	3	0	0	
P 979	P1-27 DO YOU CONSTRUCT TRANSMISSION LINES OF PARTICULAR ELECTRICAL LENGTH FOR GIVEN FREQUENCIES	1	0	2	0	3	0	0	
P 980	P1-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT AS THE FREQUENCY INCREASES AND THE PHYSICAL LENGTH OF TRANSMISSION LINES REMAIN CONSTANT, THE ELECTRICAL LENGTH INCREASES	1	0	2	0	3	0	0	
P 981	P1-29 DO YOU WORK WITH NONRESONANT (FLAT) TRANSMISSION LINES	7	8	7	0	3	33	13	
P 982	P1-30 DO YOU WORK WITH RESONANT TRANSMISSION LINES	4	0	5	0	6	0	4	
P 983	P1-31 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING STUB MATCHING	1	0	2	0	3	0	0	
P 984	P2-01 DO YOU WORK WITH WAVEGUIDES OR CAVITY RESONATORS IN YOUR PRESENT JOB	0	0	0	0	0	0	0	WAVEGUIDES AND CAVITY RESONATORS
P 985	P2-02 DO YOU INSPECT WAVEGUIDES OR CAVITY RESONATORS	0	0	0	0	0	0	0	
P 986	P2-03 DO YOU CLEAN WAVEGUIDES OR CAVITY RESONATORS	0	0	0	0	0	0	0	
P 987	P2-04 DO YOU BEND WAVEGUIDES OR CAVITY RESONATORS	0	0	0	0	0	0	0	
P 988	P2-05 DO YOU TWIST WAVEGUIDES OR CAVITY RESONATORS	0	0	0	0	0	0	0	
P 989	P2-06 DO YOU PRESSURIZE WAVEGUIDES OR CAVITY RESONATORS	0	0	0	0	0	0	0	
P 990	P2-07 DO YOU PURGE WAVEGUIDES OR CAVITY RESONATORS	0	0	0	0	0	0	0	
P 991	P2-08 DO YOU TROUBLESHOOT WAVEGUIDES OR CAVITY RESONATORS	0	0	0	0	0	0	0	
P 992	P2-09 DO YOU REMOVE OR INSTALL COMPLETE WAVEGUIDES	0	0	0	0	0	0	0	
P 993	P2-10 DO YOU REMOVE OR INSTALL WAVEGUIDE SECTIONS	0	0	0	0	0	0	0	
P 994	P2-11 DO YOU REMOVE OR INSTALL DUMMY LOADS	0	0	0	0	0	0	0	
P 995	P2-12 DO YOU REMOVE OR INSTALL E BENDS	0	0	0	0	0	0	0	
P 996	P2-13 DO YOU REMOVE OR INSTALL H BENDS	0	0	0	0	0	0	0	
P 997	P2-14 DO YOU REMOVE OR INSTALL OTHER BENDS	0	0	0	0	0	0	0	
P 998	P2-15 DO YOU REMOVE OR INSTALL CHOKE JOINTS	0	0	0	0	0	0	0	
P 999	P2-16 DO YOU REMOVE OR INSTALL ROTATING JOINTS	0	0	0	0	0	0	0	
P1000	P2-17 DO YOU REMOVE OR INSTALL DIRECTIONAL COUPLERS	0	0	0	0	0	0	0	
P1001	P2-18 DO YOU REMOVE OR INSTALL BIDIRECTIONAL COUPLERS	0	0	0	0	0	0	0	
P1002	P2-19 DO YOU USE OR REFER TO "A" WALL OF WAVEGUIDES	0	0	0	0	0	0	0	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032
P1003	P2-20 DO YOU USE OR REFER TO "B" WALL OF WAVEGUIDES	0	0	0	0	0	0	0
P1004	P2-21 DO YOU USE OR REFER TO CUTOFF FREQUENCY OF WAVEGUIDES	0	0	0	0	0	0	0
P1005	P2-22 DO YOU USE OR REFER TO FREQUENCY-DETERMINING WALL OF WAVEGUIDES	0	0	0	0	0	0	0
P1006	P2-23 DO YOU USE OR REFER TO POWER-DETERMINING WALL OF WAVEGUIDES	0	0	0	0	0	0	0
P1007	P2-24 DO YOU USE OR REFER TO ELECTRIC FIELD BOUNDARY CONDITIONS	0	0	0	0	0	0	0
P1008	P2-25 DO YOU USE OR REFER TO MAGNETIC FIELD BOUNDARY CONDITIONS	0	0	0	0	0	0	0
P1009	P2-26 DO YOU USE OR REFER TO DUPLEXER FIELD BOUNDARY CONDITIONS	0	0	0	0	0	0	0
P1010	P2-27 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST WAVEGUIDES ARE MADE WITH A "B" WALL SIZE OF .7 WAVELENGTHS OF THE OPERATING FREQUENCY	0	0	0	0	0	0	0
P1011	P2-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST "A" WALLS RANGE FROM .2 TO .5 WAVELENGTHS IN SIZE, WITH .35 USED AS AN AVERAGE	0	0	0	0	0	0	0
P1012	P2-29 ARE YOU CONCERNED WITH THE MATERIAL (SUCH AS BRASS) WHICH WAVEGUIDES ARE MADE OF	0	0	0	0	0	0	0
P1013	P2-30 DO YOU COMPUTE THE LENGTH OF A WAVEGUIDE FOR SPECIFIC INSTALLATION	0	0	0	0	0	0	0
P1014	P2-31 DO YOU USE THE RIGHT HAND RULE TO DETERMINE THE DIRECTION OF PROPAGATION, DIRECTION OF "E" FIELD, OR DIRECTION OF "H" FIELD IN WAVEGUIDES	0	0	0	0	0	0	0
P1015	P2-32 DO YOU USE OR REFER TO THE TIME PHASE OF PEAK "E" OR "H" LINES IN WAVEGUIDES	0	0	0	0	0	0	0
P1016	P2-33 DO YOU MEASURE THE TIME PHASE OF "E" OR "H" LINES IN WAVEGUIDES	0	0	0	0	0	0	0
P1017	P2-34 DO YOU USE OR REFER TO THE SPACE QUADRATURE OF "E" OR "H" LINES IN WAVEGUIDES	0	0	0	0	0	0	0
P1018	P2-35 ARE HIGH POWER PROBES USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	0	0	0	0	0	0	0
P1019	P2-36 ARE LOW POWER PROBES USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	0	0	0	0	0	0	0
P1020	P2-37 ARE LOOPS USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	0	0	0	0	0	0	0
P1021	P2-38 ARE APERTURES (WINDOWS OR IRISES) USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	0	0	0	0	0	0	0
P1022	P2-39 ARE DON'T REMEMBER THE KIND OF ENERGY COUPLING USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	0	0	0	0	0	0	0
P1023	P2-40 DO YOU DETERMINE WHERE PROBES SHOULD BE MOUNTED IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO TECHNICAL DATA	0	0	0	0	0	0	0
P1024	P2-41 DO YOU DETERMINE THE POSITIONING OF LOOPS IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO TECHNICAL DATA	0	0	0	0	0	0	0

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032
P1025 P2-92 DO YOU DETERMINE THE POSITIONING OR SIZE OF APERTURES IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO TECHNICAL DATA	0	0	0	0	0	0	0
P1026 P2-93 ARE CHOKE JOINTS USED IN WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	0	0	0	0	0	0	0
P1027 P2-94 ARE ROTATING JOINTS USED IN WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	0	0	0	0	0	0	0
P1028 P2-95 ARE DON'T REMEMBER THE KIND OF JOINTS USED IN WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	0	0	0	0	0	0	0
P1029 P2-96 DO YOU TUNE CAVITY RESONATORS USING CAPACITIVE TUNING	0	0	0	0	0	0	0
P1030 P2-97 DO YOU TUNE CAVITY RESONATORS USING INDUCTIVE TUNING	0	0	0	0	0	0	0
P1031 P2-98 DO YOU TUNE CAVITY RESONATORS USING VOLUME TUNING	0	0	0	0	0	0	0
P1032 P2-99 DO YOU TUNE CAVITY RESONATORS USING DON'T REMEMBER THE METHOD OF TUNING	0	0	0	0	0	0	0
P1033 P2-00 DO YOU MEASURE THE FREQUENCY OF SIGNALS IN CAVITY RESONATORS	0	0	0	0	0	0	0
P1034 P3-01 IN YOUR PRESENT JOB DO YOU WORK WITH KLYSTRONS, TRAVELING WAVE TUBES (TWT), PARAMETRIC AMPLIFIERS, OR MAGNETRONS	0	0	0	0	0	0	0
P1035 P3-02 DO YOU USE OR REFER TO INTERELECTRODE CAPACITANCE	0	0	0	0	0	0	0
P1036 P3-03 DO YOU USE OR REFER TO ELECTRON TRANSIT TIME	0	0	0	0	0	0	0
P1037 P3-04 DO YOU USE OR REFER TO LEAD INDUCTANCE	0	0	0	0	0	0	0
P1038 P3-05 DO YOU USE OR REFER TO RF LOSSES IN EXTERNAL CIRCUITRY	0	0	0	0	0	0	0
P1039 P3-06 DO YOU USE OR REFER TO PRINCIPLE OF ELECTRON VELOCITY MODULATION	0	0	0	0	0	0	0
P1040 P3-07 DO YOU USE OR REFER TO ELECTRON BUNCHING	0	0	0	0	0	0	0
P1041 P3-08 DO YOU WORK WITH TWO-CAVITY KLYSTRONS	0	0	0	0	0	0	0
P1042 P3-09 DO YOU WORK WITH THREE-CAVITY KLYSTRONS	0	0	0	0	0	0	0
P1043 P3-10 DO YOU WORK WITH REFLEX KLYSTRONS	0	0	0	0	0	0	0
P1044 P3-11 DO YOU WORK WITH TRAVELING-WAVE TUBES (TWT)	0	0	0	0	0	0	0
P1045 P3-12 DO YOU WORK WITH NONDEGENERATIVE PARAMETRIC AMPLIFIERS	0	0	0	0	0	0	0
P1046 P3-13 DO YOU WORK WITH UP-CONVERTER PARAMETRIC AMPLIFIERS	0	0	0	0	0	0	0
P1047 P3-14 DO YOU WORK WITH MAGNETRONS	0	0	0	0	0	0	0
P1048 P3-15 DO YOU INSPECT KLYSTRONS OR TWT	0	0	0	0	0	0	0
P1049 P3-16 DO YOU CLEAN KLYSTRONS OR TWT	0	0	0	0	0	0	0
P1050 P3-17 DO YOU TUNE KLYSTRONS OR TWT ELECTRICALLY	0	0	0	0	0	0	0
P1051 P3-18 DO YOU TUNE KLYSTRONS OR TWT MECHANICALLY	0	0	0	0	0	0	0
P1052 P3-19 DO YOU PERFORM OPERATIONAL CHECKS OF KLYSTRONS OR TWT	0	0	0	0	0	0	0
P1053 P3-20 DO YOU TROUBLESHOOT KLYSTRONS OR TWT	0	0	0	0	0	0	0
P1054 P3-21 DO YOU REMOVE OR REPLACE COMPLETE KLYSTRON OR TWT	0	0	0	0	0	0	0
P1055 P3-22 DO YOU REMOVE OR REPLACE KLYSTRON OR TWT COMPONENTS	0	0	0	0	0	0	0
P1056 P3-23 DO YOU INSPECT PARAMETRIC AMPLIFIERS	0	0	0	0	0	0	0
P1057 P3-24 DO YOU CLEAN PARAMETRIC AMPLIFIERS	0	0	0	0	0	0	0
P1058 P3-25 DO YOU ADJUST PARAMETRIC AMPLIFIERS	0	0	0	0	0	0	0

MICROWAVE AMPLIFIERS AND OSCILLATORS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032
P1059	P3-26 DO YOU TUNE PARAMETRIC AMPLIFIERS	0	0	0	0	0	0	0
P1060	P3-27 DO YOU PERFORM OPERATIONAL CHECKS OF PARAMETRIC AMPLIFIERS	0	0	0	0	0	0	0
P1061	P3-28 DO YOU TROUBLESHOOT PARAMETRIC AMPLIFIERS	0	0	0	0	0	0	0
P1062	P3-29 DO YOU REMOVE OR REPLACE COMPLETE PARAMETRIC AMPLIFIER	0	0	0	0	0	0	0
P1063	P3-30 DO YOU REMOVE OR REPLACE PARAMETRIC AMPLIFIER COMPONENTS	0	0	0	0	0	0	0
P1064	P3-31 DO YOU INSPECT MAGNETRONS	0	0	0	0	0	0	0
P1065	P3-32 DO YOU CLEAN MAGNETRONS	0	0	0	0	0	0	0
P1066	P3-33 DO YOU ADJUST MAGNETRONS	0	0	0	0	0	0	0
P1067	P3-34 DO YOU TUNE MAGNETRONS	0	0	0	0	0	0	0
P1068	P3-35 DO YOU PERFORM OPERATIONAL CHECKS OF MAGNETRONS	0	0	0	0	0	0	0
P1069	P3-36 DO YOU TROUBLESHOOT MAGNETRONS	0	0	0	0	0	0	0
P1070	P3-37 DO YOU REMOVE OR REPLACE COMPLETE MAGNETRON	0	0	0	0	0	0	0
P1071	P3-38 DO YOU REMOVE OR REPLACE MAGNETRON COMPONENTS	0	0	0	0	0	0	0
P1072	P3-39 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS COLLECTOR PLATES	0	0	0	0	0	0	0
P1073	P3-40 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATCHER CAVITIES	0	0	0	0	0	0	0
P1074	P3-41 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATCHER GRIDS	0	0	0	0	0	0	0
P1075	P3-42 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS FEEDBACK LOOPS	0	0	0	0	0	0	0
P1076	P3-43 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS DRIFT SPACES	0	0	0	0	0	0	0
P1077	P3-44 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS BUNCHER GRIDS	0	0	0	0	0	0	0
P1078	P3-45 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS BUNCHER CAVITIES	0	0	0	0	0	0	0
P1079	P3-46 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CONTROL GRIDS	0	0	0	0	0	0	0
P1080	P3-47 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATHODES	0	0	0	0	0	0	0
P1081	P3-48 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON REPELLER (REFLECTOR) PLATES	0	0	0	0	0	0	0
P1082	P3-49 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON GRIDS	0	0	0	0	0	0	0
P1083	P3-50 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON GRID CAVITY GAPS	0	0	0	0	0	0	0
P1084	P3-51 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON RESONANT CAVITIES	0	0	0	0	0	0	0
P1085	P3-52 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON MAGNETIC COUPLING LOOPS	0	0	0	0	0	0	0
P1086	P3-53 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON FILAMENTS	0	0	0	0	0	0	0
P1087	P3-54 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON CATHODES	0	0	0	0	0	0	0

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

BY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
P1088 P3-56 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON OUTPUT LEADS	0	0	0	0	0	0	0	
P1089 P3-66 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES FILAMENTS	0	0	0	0	0	0	0	
P1090 P3-67 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES CATHODES	0	0	0	0	0	0	0	
P1091 P3-58 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES MODULATOR GRIDS	0	0	0	0	0	0	0	
P1092 P3-59 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES ANODES	0	0	0	0	0	0	0	
P1093 P3-60 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES HELIXES	0	0	0	0	0	0	0	
P1094 P3-61 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES COLLECTORS	0	0	0	0	0	0	0	
P1095 P3-62 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES MAGNETS	0	0	0	0	0	0	0	
P1096 P3-63 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES ATTENUATORS	0	0	0	0	0	0	0	
P1097 P3-64 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER FERRITE CIRCULATORS	0	0	0	0	0	0	0	
P1098 P3-65 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER SIGNAL CAVITIES	0	0	0	0	0	0	0	
P1099 P3-66 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER IDLER CAVITIES	0	0	0	0	0	0	0	
P1100 P3-67 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER VARACTOR DIODES	0	0	0	0	0	0	0	
P1101 P3-68 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER FERRITE ISOLATORS	0	0	0	0	0	0	0	
P1102 P3-69 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER REVERSE-BIAS BATTERIES	0	0	0	0	0	0	0	
P1103 P3-70 DO YOU PERFORM TASKS ON ANODES	0	0	0	0	0	0	0	
P1104 P3-71 DO YOU PERFORM TASKS ON ANODE COOLING PINS	0	0	0	0	0	0	0	
P1105 P3-72 DO YOU PERFORM TASKS ON COUPLING LOOPS	0	0	0	0	0	0	0	
P1106 P3-73 DO YOU PERFORM TASKS ON HEATER LEADS	0	0	0	0	0	0	0	
P1107 P3-74 DO YOU PERFORM TASKS ON RESONANT CAVITIES	0	0	0	0	0	0	0	
P1108 P3-75 DO YOU PERFORM TASKS ON CATHODES	0	0	0	0	0	0	0	
P1109 P3-76 DO YOU PERFORM TASKS ON MAGNETS	0	0	0	0	0	0	0	
Q1110 Q1-01 DO YOU USE OR REFER TO STORAGE REGISTERS	82	92	80	100	97	100	58	
Q1111 Q1-02 DO YOU USE OR REFER TO SHIFT REGISTERS	84	77	85	100	84	100	79	
Q1112 Q1-03 DO YOU USE OR REFER TO LOGIC SYMBOLS OF SHIFT REGISTERS	81	69	84	33	84	100	79	REGISTERS
Q1113 Q1-04 DO YOU USE OR REFER TO LOGIC SYMBOLS OF STORAGE REGISTERS	78	69	80	33	90	100	63	
Q1114 Q1-05 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF SHIFT REGISTERS	79	69	82	67	84	100	71	
Q1115 Q1-06 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF OTHER TYPE OF REGISTERS	71	69	71	67	90	33	50	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
Q1116	Q1-07 DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP OF A SHIFT REGISTER AFTER A SPECIFIED NUMBER OF SHIFT PULSES HAVE PASSED	72	77	71	100	81	100	50	
Q1117	Q2-01 DO YOU WORK WITH DIGITAL COUNTERS, REGISTERS, OR STORAGE DEVICES IN YOUR PRESENT JOB	81	92	78	100	89	100	75	
Q1118	Q2-02 DO YOU USE OR REFER TO DELAY LINES	46	38	47	0	45	67	54	
Q1119	Q2-03 DO YOU USE OR REFER TO MAGNETIC CORES	82	85	82	67	90	100	75	
Q1120	Q2-04 DO YOU USE OR REFER TO MAGNETIC DRUMS	29	8	27	0	48	0	0	STORAGE DEVICES
Q1121	Q2-05 DO YOU USE OR REFER TO MAGNETIC TAPES	90	15	95	33	74	0	0	
Q1122	Q2-06 DO YOU USE OR REFER TO ACCESS TIME OR SPEED OR MEMORY SYSTEMS	53	54	53	33	71	67	29	
Q1123	Q2-07 DO YOU USE OR REFER TO WORD CAPACITY OF MEMORY SYSTEMS	75	92	71	100	97	67	46	
Q1124	Q2-08 DO YOU USE OR REFER TO VOLATILITY OF MEMORY SYSTEMS	35	38	35	33	52	33	21	
Q1125	Q2-09 DO YOU USE OR REFER TO LOGIC SYMBOL OF DELAY LINES	43	31	45	0	45	33	50	
Q1126	Q3-01 IN YOUR PRESENT JOB, DO YOU WORK WITH DIGITAL-TO-ANALOG (D/A) CONVERTERS, ANALOG-TO-DIGITAL (A/D) CONVERTERS, OR BINARY-TO-DECIMAL READOUT CONVERTERS	29	38	27	33	42	0	17	
Q1127	Q3-02 DO YOU COMPUTE OUTPUT VOLTAGES FOR ELECTROMECHANICAL DIGITAL-TO-ANALOG (D/A) CONVERTERS FOR GIVEN INPUT VOLTAGES	12	23	9	0	16	0	4	DIGITAL TO ANALOG CONVERTERS
Q1128	Q3-03 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE COUNT IN ELECTROMECHANICAL DIGITAL-TO-ANALOG (D/A) CONVERTERS IS DETERMINED BY ADDING THE DENOMINATORS OF THE RESISTORS	7	8	7	0	13	0	0	
Q1129	Q3-04 DO YOU COMPUTE ANALOG VOLTAGES FOR GIVEN BINARY COUNTS IN ELECTRONIC DIGITAL-TO-ANALOG (D/A) CONVERTERS	12	15	11	0	19	0	4	
Q1130	Q3-05 DO YOU PERFORM SAMPLE FUNCTION TASKS ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS	12	15	11	0	16	0	8	
Q1131	Q3-06 DO YOU PERFORM HOLD FUNCTION TASKS ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS	10	15	9	0	16	0	4	
Q1132	Q3-07 DO YOU PERFORM COMPARE FUNCTION TASKS ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS	13	15	13	0	19	0	8	
Q1133	Q3-08 DO YOU PERFORM DIGITIZE FUNCTION TASKS ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS	9	15	7	0	10	0	8	
Q1134	Q3-09 DO YOU PERFORM DON'T REMEMBER WHICH FUNCTION TASKS ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS	10	15	9	0	23	0	0	
Q1135	Q3-10 DO YOU USE OR REFER TO SAMPLE FUNCTION OF A/D CONVERTERS	6	15	4	0	6	0	4	
Q1136	Q3-11 DO YOU USE OR REFER TO HOLD FUNCTION OF A/D CONVERTERS	6	15	4	0	6	0	4	
Q1137	Q3-12 DO YOU USE OR REFER TO COMPARE FUNCTION OF A/D CONVERTERS	7	15	5	0	10	0	4	
Q1138	Q3-13 DO YOU USE OR REFER TO DIGITAL FUNCTION OF A/D CONVERTERS	6	15	4	0	6	0	4	
Q1139	Q3-14 DO YOU PERFORM ANY TASKS ON MECHANICAL ANALOG-TO-DIGITAL (A/D) CONVERTERS	6	8	5	0	13	0	0	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
R1190	R1-01 DO YOU WORK WITH PHANTASTRON CIRCUITRY IN YOUR PRESENT JOB	0	0	0	0	0	0	0	PHANTASTRONS
R1191	R2-01 IN YOUR PRESENT JOB DO YOU WORK WITH SCHMITT TRIGGER CIRCUITS	63	59	65	67	71	100	50	SCHMITT TRIGGERS
R1192	R2-02 DO YOU TRACE DATA FLOW THROUGH SCHMITT TRIGGER SCHEMATIC DIAGRAMS	60	59	62	67	65	100	50	
R1193	R2-03 DO YOU USE OR REFER TO SCHMITT TRIGGER LOGIC SYMBOLS	62	54	64	67	68	100	50	
R1194	R3-01 IN YOUR PRESENT JOB DO YOU FABRICATE MULTICONDUCTOR CABLES	29	15	33	0	23	67	46	CABLE FABRICATION
R1195	R3-02 DO YOU FABRICATE COAXIAL CABLES	13	0	16	0	10	0	25	
S1196	S1-01 IN YOUR PRESENT JOB DO YOU PERFORM ANY TASKS ON VISUAL READOUT SYSTEMS	63	77	60	33	65	100	67	
S1197	S1-02 DO YOU PERFORM ANY TASKS ON NIXIE LIGHTS OR NIXIE LIGHT DECODER SYSTEMS	16	23	15	0	29	0	8	INPUT/OUTPUT DEVICES
S1198	S1-03 DO YOU ANALYZE NIXIE LIGHT DECODER SYSTEMS USING BOOLEAN ALGEBRA	12	15	11	0	23	0	4	
S1199	S2-01 DO YOU WORK WITH PHOTO TUBES IN YOUR PRESENT JOB	13	0	16	0	26	0	0	PHOTO SENSITIVE DEVICES
S1150	S3-01 IN YOUR PRESENT JOB DO YOU WORK WITH CHOPPER CIRCUITS	0	0	0	0	0	0	0	
S1151	S3-02 DO YOU MEASURE EXCITATION FREQUENCIES	0	0	0	0	0	0	0	
S1152	S3-03 DO YOU MEASURE VOLTAGE-CURRENT PHASE RELATIONSHIPS	0	0	0	0	0	0	0	SYNCHRONOUS VIBRATIONS (CHOPPER CIRCUITS)
S1153	S3-04 DO YOU USE OR REFER TO EXCITATION FREQUENCIES	0	0	0	0	0	0	0	
S1154	S3-05 DO YOU USE OR REFER TO VOLTAGE-CURRENT PHASE RELATIONSHIPS	0	0	0	0	0	0	0	
S1155	S3-06 DO YOU USE SERVOS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	0	0	0	0	0	0	0	
S1156	S3-07 DO YOU USE DETECTORS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	0	0	0	0	0	0	0	
S1157	S3-08 DO YOU USE ERROR SIGNAL DEVICES IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	0	0	0	0	0	0	0	
S1158	S3-09 DO YOU USE COMPARISON CIRCUITS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	0	0	0	0	0	0	0	
T1159	T1-01 DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH INFRARED SYSTEMS	0	0	0	0	0	0	0	
T1160	T1-02 DO YOU INSPECT INFRARED SYSTEMS	0	0	0	0	0	0	0	
T1161	T1-03 DO YOU CLEAN INFRARED SYSTEMS	0	0	0	0	0	0	0	INFRARED
T1162	T1-04 DO YOU ADJUST OR CALIBRATE INFRARED SYSTEMS	0	0	0	0	0	0	0	
T1163	T1-05 DO YOU OPERATE INFRARED SYSTEMS	0	0	0	0	0	0	0	
T1164	T1-06 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF INFRARED SYSTEMS	0	0	0	0	0	0	0	
T1165	T1-07 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF INFRARED SYSTEMS	0	0	0	0	0	0	0	
T1166	T1-08 DO YOU TROUBLESHOOT DOWN TO INFRARED SYSTEM COMPONENT PARTS	0	0	0	0	0	0	0	
T1167	T1-09 DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF INFRARED SYSTEMS	0	0	0	0	0	0	0	
T1168	T1-10 DO YOU REMOVE OR REPLACE INFRARED SYSTEM COMPONENT PARTS	0	0	0	0	0	0	0	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
T1169	T1-11 DO YOU USE OR REFER TO FAR REGION	0	0	0	0	0	0	0	
T1170	T1-12 DO YOU USE OR REFER TO INTERMEDIATE REGION	0	0	0	0	0	0	0	
T1171	T1-13 DO YOU USE OR REFER TO NEAR REGION	0	0	0	0	0	0	0	
T1172	T1-14 DO YOU USE OR REFER TO MICRON	0	0	0	0	0	0	0	
T1173	T1-15 DO YOU USE OR REFER TO GRAY BODIES	0	0	0	0	0	0	0	
T1174	T1-16 DO YOU USE OR REFER TO BLACK BODIES	0	0	0	0	0	0	0	
T1175	T1-17 DO YOU USE OR REFER TO ABSORPTION	0	0	0	0	0	0	0	
T1176	T1-18 DO YOU USE OR REFER TO SCATTERING	0	0	0	0	0	0	0	
T1177	T1-19 DO YOU USE OR REFER TO ABSOLUTE ZERO	0	0	0	0	0	0	0	
T1178	T1-20 DO YOU PERFORM TASKS ON BLITZ	0	0	0	0	0	0	0	
T1179	T1-21 DO YOU PERFORM TASKS ON TARGET BUTTONS	0	0	0	0	0	0	0	
T1180	T1-22 DO YOU PERFORM TASKS ON ERECTOR LENSES	0	0	0	0	0	0	0	
T1181	T1-23 DO YOU PERFORM TASKS ON OCULAR LENSES	0	0	0	0	0	0	0	
T1182	T1-24 DO YOU PERFORM TASKS ON CORRECTION LENSES	0	0	0	0	0	0	0	
T1183	T1-25 DO YOU PERFORM TASKS ON FILTERS	0	0	0	0	0	0	0	
T1184	T1-26 DO YOU PERFORM TASKS ON SPHERICAL MIRRORS	0	0	0	0	0	0	0	
T1185	T1-27 DO YOU PERFORM TASKS ON PLANE MIRRORS	0	0	0	0	0	0	0	
T1186	T2-01 DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH LASERS	0	0	0	0	0	0	0	
T1187	T2-02 DO YOU INSPECT LASER SYSTEMS	0	0	0	0	0	0	0	
T1188	T2-03 DO YOU CLEAN LASER SYSTEMS	0	0	0	0	0	0	0	
T1189	T2-04 DO YOU OPERATE LASER SYSTEMS	0	0	0	0	0	0	0	
T1190	T2-05 DO YOU OPERATE LASER SYSTEMS	0	0	0	0	0	0	0	LASERS
T1191	T2-06 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF LASER SYSTEMS	0	0	0	0	0	0	0	
T1192	T2-07 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF LASER SYSTEMS	0	0	0	0	0	0	0	
T1193	T2-08 DO YOU TROUBLESHOOT TO COMPONENT PARTS OF LASER SYSTEMS	0	0	0	0	0	0	0	
T1194	T2-09 DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF LASER SYSTEMS	0	0	0	0	0	0	0	
T1195	T2-10 DO YOU REMOVE OR REPLACE COMPONENT PARTS OF LASER SYSTEMS	0	0	0	0	0	0	0	
T1196	T2-11 DO YOU USE OR REFER TO ANGSTROMS (A)	0	0	0	0	0	0	0	
T1197	T2-12 DO YOU USE OR REFER TO ELECTRON ENERGY LEVELS	0	0	0	0	0	0	0	
T1198	T2-13 DO YOU USE OR REFER TO GROUND STATE	0	0	0	0	0	0	0	
T1199	T2-14 DO YOU USE OR REFER TO EXCITED STATE	0	0	0	0	0	0	0	
T1200	T2-15 DO YOU USE OR REFER TO PACKET OF RADIATION	0	0	0	0	0	0	0	
T1201	T2-16 DO YOU USE OR REFER TO PHOTONS	0	0	0	0	0	0	0	
T1202	T2-17 DO YOU USE OR REFER TO SPONTANEOUS EMISSION	0	0	0	0	0	0	0	
T1203	T2-18 DO YOU USE OR REFER TO STIMULATED EMISSION	0	0	0	0	0	0	0	
T1204	T2-19 DO YOU USE OR REFER TO COHERENCE OR INCOHERENCE	0	0	0	0	0	0	0	
T1205	T2-20 DO YOU USE OR REFER TO INVERSION LEVEL	0	0	0	0	0	0	0	
T1206	T2-21 DO YOU USE OR REFER TO MONOCHROMATIC	0	0	0	0	0	0	0	
T1207	T2-22 DO YOU WORK WITH ACTIVE MATERIALS	0	0	0	0	0	0	0	
T1208	T2-23 DO YOU WORK WITH PUMPING SOURCES	0	0	0	0	0	0	0	
T1209	T2-24 DO YOU WORK WITH FULL SILVERED (100% REFLECTIVE) MIRRORS	0	0	0	0	0	0	0	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
T1210	T2-25 DO YOU WORK WITH HALF SILVERED (92% REFLECTIVE) MIRRORS	0	0	0	0	0	0	0	
T1211	T2-26 DO YOU WORK WITH HELICAL FLASHTUBES	0	0	0	0	0	0	0	
T1212	T2-27 DO YOU WORK WITH RUBY	0	0	0	0	0	0	0	
T1213	T2-28 DO YOU WORK WITH HELIUM-NEON	0	0	0	0	0	0	0	
T1214	T2-29 DO YOU WORK WITH HELIUM-XENON	0	0	0	0	0	0	0	
T1215	T2-30 DO YOU WORK WITH XENON	0	0	0	0	0	0	0	
T1216	T2-31 DO YOU WORK WITH CESIUM-HELIUM	0	0	0	0	0	0	0	
T1217	T2-32 DO YOU WORK WITH ARGON	0	0	0	0	0	0	0	
T1218	T2-33 DO YOU WORK WITH NEODYMIUM IN GLASS	0	0	0	0	0	0	0	
T1219	T2-34 DO YOU WORK WITH GALLIUM ARSENIDE	0	0	0	0	0	0	0	
T1220	T3-01 IN YOUR PRESENT JOB DO YOU WORK WITH DISPLAY TUBES, SUCH AS DIRECT VIEW STORAGE (DVST) OR MULTIPLE MODE STORAGE TUBES (MMST)	3	0	4	0	6	0	0	
T1221	T3-02 DO YOU INSPECT DVST OR MMST	0	0	0	0	0	0	0	
T1222	T3-03 DO YOU CLEAN DVST OR MMST	0	0	0	0	0	0	0	
T1223	T3-04 DO YOU ADJUST OR CALIBRATE DVST OR MMST	0	0	0	0	0	0	0	DISPLAY TUBES
T1224	T3-05 DO YOU OPERATE SYSTEMS THAT CONTAIN DVST OR MMST	0	0	0	0	0	0	0	
T1225	T3-06 DO YOU TROUBLESHOOT DVST OR MMST CIRCUITS	0	0	0	0	0	0	0	
T1226	T3-07 DO YOU REMOVE OR REPLACE DVST OR MMST TUBES FROM MAJOR ASSEMBLIES OR UNITS	0	0	0	0	0	0	0	
T1227	T3-08 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME THE VARIOUS ELEMENTS OF DVST	0	0	0	0	0	0	0	
T1228	T3-09 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME THE VARIOUS ELEMENTS OF MMST	0	0	0	0	0	0	0	
T1229	T3-10 DO YOU PERFORM TASKS ON FLOOD GUNS	0	0	0	0	0	0	0	
T1230	T3-11 DO YOU PERFORM TASKS ON WRITE GUNS	1	0	2	0	3	0	0	
T1231	T3-12 DO YOU PERFORM TASKS ON ATTACK GUNS	0	0	0	0	0	0	0	
T1232	T3-13 DO YOU PERFORM TASKS ON ERASE GUNS	0	0	0	0	0	0	0	
T1233	T3-14 DO YOU PERFORM TASKS ON STORAGE GRIDS	4	0	5	0	10	0	0	
U1234	U1-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY PROGRAMMING TASKS	79	62	84	0	84	100	83	
U1235	U1-02 DO YOU USE OR REFER TO DECIMAL SYSTEMS	59	38	64	0	68	100	50	
U1236	U1-03 DO YOU USE OR REFER TO PROGRAMS	68	96	73	0	81	100	58	
U1237	U1-04 DO YOU USE OR REFER TO HEXIDECIMAL SYSTEMS	36	0	44	0	58	0	13	
U1238	U1-05 DO YOU USE OR REFER TO 8-4-2-1 SYSTEMS	51	38	55	0	61	67	46	PROGRAMMING
U1239	U1-06 DO YOU USE OR REFER TO FOUR SYSTEMS	12	23	9	0	23	0	4	
U1240	U1-07 DO YOU USE OR REFER TO BINARY SYSTEMS	74	54	78	0	84	100	67	
U1241	U1-08 DO YOU USE OR REFER TO TIME-SHARING	51	38	55	0	68	67	42	
U1242	U1-09 DO YOU USE OR REFER TO DATA WORDS	63	38	69	0	84	0	50	
U1243	U1-10 DO YOU USE OR REFER TO ADDRESS WORDS	74	62	76	0	87	100	67	
U1244	U1-11 DO YOU USE OR REFER TO ADDRESS/SUBADDRESS	51	38	55	0	68	0	46	
U1245	U1-12 DO YOU USE OR REFER TO STEERING/INFORMATION	40	23	44	0	55	0	25	
U1246	U1-13 DO YOU USE OR REFER TO INFORMATION WORDS	62	46	65	0	74	100	96	
U1247	U1-14 DO YOU PERFORM TASKS ON SINGLE LEVEL PROGRAMMING	47	38	49	0	52	33	46	
U1248	U1-15 DO YOU PERFORM TASKS ON MULTI-LEVEL PROGRAMMING	31	31	31	0	45	33	17	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 026	SPC 027	SPC 028	SPC 029	SPC 030	SPC 031	SPC 032	
U1249	U1-16 DO YOU PERFORM TASKS ON INPUT DEVICES	53	38	56	0	74	33	42	
U1250	U1-17 DO YOU PERFORM TASKS ON STORAGE DEVICES	51	38	55	0	71	67	38	
U1251	U1-18 DO YOU PERFORM TASKS ON ARITHMETIC SECTIONS	29	8	35	0	48	0	21	
U1252	U1-19 DO YOU PERFORM TASKS ON CONTROL SECTIONS	43	23	47	0	58	0	38	
U1253	U1-20 DO YOU PERFORM TASKS ON OUTPUT DEVICES	46	38	47	0	61	33	38	
U1254	U1-21 DO YOU PERFORM TASKS ON POWER SUPPLIES	43	23	47	0	61	33	29	
U1255	U2-01 DO YOU USE DECIBELS TO EXPRESS AMPLIFICATION AND ATTENUATION	43	38	44	0	46	33	54	
U1256	U2-02 DO YOU USE LOGARITHMS TO COMPUTE OUTPUT POWER IN DECIBELS	6	15	4	0	10	33	0	
U1257	U2-03 DO YOU USE LOGARITHMS TO COMPUTE ATTENUATION IN DECIBELS	6	15	4	0	10	33	0	DB AND POWER RATIOS
U1258	U2-04 DUMMY TASK TO IDENTIFY INCUMBENTS WHO PERFORMED NO TASKS	1	0	2	0	0	0	0	

AD-A044 659 AIR FORCE OCCUPATIONAL MEASUREMENT CENTER LACKLAND A--ETC F/G 5/9
ELECTRICAL SWITCHING SYSTEMS REPAIRMAN AFSC 36252.(U)
SEP 77 T J O'CONNOR, E J WEBER

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INFORMATION

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19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

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Teaching methods
Training

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report summarizes the results of the administration of the Electronic Principles Inventory to airmen assigned as Electrical Switching Systems Repairman (AFSC 36252). The report gives a detailed listing of the technical tasks and knowledge needed to perform the jobs within the specialty or career ladder.

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This specialty has the following functions:

Maintains and repairs electronic switching systems equipment. Performs preventive maintenance routines at periodic intervals. Maintains, replaces and repairs electronic switching systems components. Maintains inspection and maintenance records. Supervises electronic switching systems repair personnel.